



II-Indonesian Conference on Clinical Pharmacy

27-28 October 2016
Bali, Indonesia

ABSTRACT BOOK

Organized by

Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran (<http://farmasi.unpad.ac.id>).
Supported by Department of Pharmacy, Universitas Udayana and School of Pharmacy, Institut Teknologi Bandung. General information: www.iccp-ofki.com.

Published by

Asian Journal of Pharmaceutical & Clinical Research
www.ajpcr.com



ABOUT THE CONFERENCE

Second Indonesian Conference on Clinical Pharmacy (ICCP) is a joint effort of Faculty of Pharmacy, Universitas Padjadjaran; Department of Pharmacy, Universitas Udayana; and School of Pharmacy, Institut Teknologi Bandung. Featuring world class speakers from the field of clinical pharmacy and conducting several parallel workshop sessions, the conference deliberation will be on the following theme: “Appraising Clinical Pharmacy Excellence, Nourishing Prominent Practice”.

Our targeted participants are graduate and undergraduate students, faculty members, practitioners from hospitals, community pharmacies and pharmaceutical industries, researchers, government officials and other health care professionals.

Next to the conference, Olimpiade Farmasi Klinik Indonesia (OFKI) 2016 also will be held at the same time. All accepted abstracts on this conference will be published in Asian Journal of Pharmaceutical and Clinical Research (AJPCR). Selected full articles will be published in: (i) AJPCR (a Scopus-indexed journal), (ii) Indonesian Journal of Clinical Pharmacy (IJCP, a DIKTI-accredited journal) or (iii) Pharmacology and Clinical Pharmacy Research (PCPR).

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Date	Description	Speaker	Theme	Moderator
27-Oct				
08.00-08.20	Registration			
08.20-08.30	Chairperson speech	Dr. Keri Lestari, M.Si., Apt.		
08.30-08.50	Opening speech	Prof. Tri Hanggono Ahmad		
08.50-09.00	Opening cultural ceremony			
09.00-09.30	Keynote speech	Prof. Dr. Nila Djuwita F. Moeloek, Sp.M.		
09.30-10.15	Panel discussion	Kemenkes, IAI, KFN, APTFI, KIFI	Credentialing Clinical Pharmacy Practice in Indonesia	Dr.rer.nat. I Made A. Gelgel W., M.Si., Apt.
10.15-10.30	Coffee break			
10.30-12.00	Plenary session I	Prof. Roger Walker	Opportunities to develop clinical pharmacy practice: the Welsh experience	Prof. Ajeng Diantini, MS, Apt.
12.00-13.00	Lunch and poster presentation session I			
13.00-14.45	Workshop (parallel session)	Prof. Kevin Baird	Treatment of Tropical Diseases in Asia: Malaria as A Reference Case	Irma Melyani Puspitasari, Ph.D., Apt.
		Sanofi Pasteur	How to Conduct A Good Clinical Trial?	Rizky Abdulah, Ph.D., Apt.
14.45-15.00	Coffee break			
15.00-17.00	Oral presentation session I	Room 1 Room 2 Room 3		Dr. Jutti Levita, M.Si., Apt. Desak Ketut Ernawati, Ph.D., Apt. Farmasi Udayana
17.00-18.00	Poster presentation session II			
28-Oct				
08.00-08.30	Poster presentation session III			
08.30-10.30	Plenary session II	Prof. Kevin Baird	Malaria Distribution, Prevalence, Drug Resistance and Control in Indonesia	Prof. Anas Subarnas, M.Sc., Apt.
		Dr. Anne-Frieda Taurel	Epidemiological Evidence from A Clinical Trial Study: Lessons Learned from Dengue Vaccine	Dr. I Ketut Adnyana, Apt.
10.30-10.45	Coffee break			
10.45-12.30	Workshop (parallel session)	Prof. Roger Walker	Developing Clinical Pharmacy Practice	Ni Made Pitri Susanti, S.Farm., M.Si., Apt.
		KIFI Sub-Kolegium Farmasi Klinik	Preceptor in Clinical Pharmacy Education	Dr. Sri Adi Sumiwi, MS, Apt.
12.30-13.30	Lunch and poster presentation session IV			
13.30-15.00	Oral presentation session II	Room 1 Room 2 Room 3		Dr. Eli Halimah, M.Si., Apt. Farmasi Udayana Farmasi Udayana
15.00-15.15	Coffee break			
15.15-17.15	Invited speaker presentation session	Dr. Rizka Andalusia, M.Pharm., Apt. Dr. I Ketut Adnyana, Apt. Desak Ketut Ernawati, Ph.D., Apt. Auliya A. Suwantika, Ph.D., Apt.		Dr.rer.nat. Sophi Damayanti, M.Si., Apt.
17.15-17.30	Closing speech and ceremony	Dr. Keri Lestari, M.Si., Apt.		

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A STUDY OF DRUG RELATED PROBLEM IN UROLOGIC PATIENTS: A COHORT PROSPECTIVE STUDY

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ABSTRACT

Drug therapy problems (DRPs) are the clinical domain of the pharmaceutical care practitioner. The purpose of identifying drug therapy problems is to help patients achieve their goals of therapy and realize the best possible outcomes from drug therapy. The purpose of this study was to determine the number and classification of drug related problems that occurred in postoperative patient in urology surgery ward. A prospective study was conducted in 3 months, involving 62 hospitalized postoperative patients in the urology surgery ward of a teaching hospital in Surabaya. Clinical pharmacist were involved in medical rounds to identify drug related problems. Thirty seven patients were identified with 81 drug related problems. This study found that 20 patients had more than one drug related problem. The most common identified drug related problems were overdose (38%), drug use without indications (20%), improper drugs (11%), drug interactions (10%), untreated indications (9%), adverse drug reactions (7%), failure to receive drugs (4%) and sub-therapeutic drugs (1%). The clinical pharmacist's recommendation consisted of dose adjustment, monitoring, drug discontinuation, drug change, add therapy, counseling to patients, dose increased and refer to prescriber. The most common identified drug related problems are overdose, drug use without indications and improper drugs. Clinical pharmacists in clinical medical rounds facilitates have obligation to identify, prevent, resolve drug related problems and help patients to achieve their goals of therapy and improve patient's quality of life.

Keywords: Drug related problems, DRPs, Clinical pharmacist, Drug therapy, Drug interactions, Adverse drug reactions, Drug related hospitalizations.

OFF-LABEL DRUG USE IN PEDIATRIC INPATIENTS DIAGNOSED WITH NEPHROTIC SYNDROME IN A NATIONAL REFERRAL HOSPITAL: AN INDONESIAN CONTEXT

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ABSTRACT

The information about the use of off-label drugs in pediatric, especially pediatric with nephrotic syndrome is still lacking. This study aimed to estimate the prevalence of off-label prescribing in pediatric inpatients with nephrotic syndrome in a national referral hospital in Indonesia. A retrospective study was conducted in study hospital using medication records from pediatric inpatients with nephrotic syndrome who met the inclusion criteria. Patient and prescribing data were collected, and drugs were classified as on-label or off-label/unlicensed based on Indonesia National Drug information (IONI). Thereafter, off-label drugs were categorized with a hierarchical system of age, indication, route of administration, and dosage. There were 1553 drugs with 94 different types of drug were administered to 67 patients during the study period. The data uncovered that 1023 (65.9%) of the drug prescriptions were used off-label. The range of off-label use per patient was 2-101 drugs. Most off-label drugs (n=433, 42.4%) were from non-diuretics anti-hypertensive drugs. The most commonly drug used in off-label manner was prednisolone (n=125, 12.2%). The high rate of off-label drug use in children was mainly related to age (n=772, 75.5%). Pediatrics with nephrotic syndrome was very vulnerable to off-label uses where every patient received at least 2 off-label drugs. It seems that off-label prescribing in pediatric with nephrotic syndrome was not influenced by age or gender as every patient received off-label drugs. Clinical trials for pediatric drugs are essential to provide complete product information for pediatric use.

Keywords: Off-label drug, Nephrotic syndrome, Inpatient, Pediatrics.

THE CORRELATION OF AGE AND STATUS OF PATIENT'S COMPLIANCE WITH ANTIHYPERTENSIVE DRUGS (THE STUDY WAS CONDUCTED IN PRIMARY HEALTH CARE OF MALANG)

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ABSTRACT

Hypertension is a disease with high prevalence and significant in causing morbidity and mortality. Optimizing therapy of antihypertensive drugs is influenced by many factors, including patient's compliance. Patient's age is one of the most influential factors on the status of compliance. Most of the studies showed that patient's age has correlation with the status of compliance, although patient's age is not the cause of non compliance. Elderly has inferior memory, inferior hearing, and inferior sight, therefore they had low compliance in the usage of antihypertensive drugs. This study was aimed to determine the correlation of age and status of patient compliance with antihypertensive drugs in Puskesmas Kota Malang. Puskesmas Kota Malang known to have one of the highest prevalence of hypertensive patient in East Java. This study was conducted by using correlative observational method with cross sectional approach. A total of 80 sample patients taken by purposive sampling among all hypertensive patients who visited Puskesmas Kota Malang. The status compliance was measured by using Morisky Medication Adherence Scale 8 (MMAS-8) questionnaire. The data was analyzed by using Spearman Rank correlation hypothesis test. The results showed that 46 patients (57,5%) had low compliance, 27 patients (33,75%) had medium compliance, and 7 patients (8,75%) had high compliance. Patient's age had no significant correlation with status of patient compliance ($p = 0,195$). Patient's age had no significant influence and correlation with status of patient compliance in the use of antihypertensive drugs.

Keywords: Patient's age, Antihypertensive drugs, Level of compliance, Hypertension.

THE COMPARISON OF PARTITION COEFFICIENT BETWEEN THYMOQUINONE AND 2,3,6-TRIMETHYL-5-BROMOBUTYL-1,4-BENZOQUINONE

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ABSTRACT

Thymoquinone is the main bioactive compound contained in *Nigella sativa* (Habbatussauda) which has therapeutic effects in various diseases. Until now, the information of the physico-chemistry properties of this compound is limited. This study aimed to analyze the physico-chemistry properties of thymoquinone, i.e. partition coefficient, as this is one of parameters that influences its biological effect and pharmacokinetics properties. The additional purpose was to modify the structure of thymoquinone to provide 2-(4-bromobutyl)-3,5,6-trimethylcyclohexa-2,5-diene-1,4-dione which was expected to increase of partition coefficient. The methods were succession reactions of oxidation and bromoalkylation using 2,3,6-trimethyl-1,4-hydroquinone as a starting material. The partition coefficient is determined using a shake-flask method with n-octanol/water as solvent. The results of this study indicated that there was significant difference between the value of the partition coefficient of thymoquinone and its derivative (Mann-Whitney, $p < 0.05$). The median value of thymoquinone partition coefficient was 1.0427, while the derivative's mean value was 2.0289 ± 0.1173 . In conclusion, 2-(4-bromobutyl)-3,5,6-trimethylcyclohexa-2,5-diene-1,4-dione has a greater partition coefficient than thymoquinone therefore, the derivative compound has a better membrane penetration than that in the parent compound.

Keywords: Derivative, *Nigella sativa*, Partition coefficient, Thymoquinone, Shake-flask method.

THE COMPARISON OF ANTIBIOTICS USE FOR OUTPATIENTS IN MLATI II PRIMARY HEALTH CARE BETWEEN 2009-2013 AND 2004-2008 USING ATC/DDD METHOD

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ABSTRACT

Antibiotics are the most commonly used medications associated with the high incidence of bacterial infection. Improper use of antibiotics often causes many problems such as antibiotic resistance, negative effects on the patient and ecological imbalance, and increasing cost of treatment. The aim of this study was to give an overview of antibiotics consumption in outpatients using ATC/DDD index, which is an accepted standard method and suggested by the WHO. This study was performed in Mlati II Sleman Yogyakarta Primary Health Care. Collected data were of name, dosage form, and the amount of antibiotics used over a period of 5 years (2009-2013). The results were counted as DDD in every 1000 outpatients' visits, and the percentages of each year were calculated to be compared with the previous period (2004-2008). The amount of antibiotics used was also analyzed based on antibiotic type that includes in DU 90%. The significance of differences in antibiotics used for both study-periods was analyzed with Independent Sample T-Test and Mann Whitney. The results showed that amoxicillin, erythromycin, chloramphenicol, ciprofloxacin, metronidazole, and cotrimoxazol were used from 2009 until 2013. The most frequently used antibiotic was marked at 1086,42 DDD/1000 KPRJ in 2013 which was amoxicillin and it had been occupied in the first segment of DU 90% for 5 years. The least amount of antibiotic used was phenoxymethyl penicillin which was accounted 2,70 DDD/1000 KPRJ in 2010. The average percentage of antibiotic used in accordance to DOEN was 93,8%. There was a change in the pattern of antibiotic used in Mlati II Primary Health Care between 2009-2013 and 2004-2008 in terms of the types and quantities.

Keywords: Antibiotics, ATC/DDD, DU 90%, Primary Health Care.

SERUM CYSTATIN C ROLE IN IDENTIFICATION OF RENAL DYSFUNCTION AMONG ELDERLY CKD PATIENTS

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ABSTRACT

Serum Cystatin C is a new endogenous biomarker of renal function. Diabetes mellitus and hypertension are the most common causes of CKD among Elderly CKD Patients. Chronic kidney disease (CKD) has been mainly evaluated by glomerular filtration rate (GFR) which is used as main diagnostic tool to predict kidney dysfunction. Currently, Cystatin C is recognized as the most accurate endogenous GFR marker (surpasses creatinine). In case of pathology its level in blood increases. The more severe the renal pathology, the worse Cystatin C filtrates in kidneys and the higher its blood level is. The aim of the current study was to identify the role of cystatin C in the diagnosis of chronic kidney disease in patients with type 2 diabetes mellitus (DM2). The study involved 40 patients with DM2, their mean age being 60 [61; 74] years, DM2 duration — 8.7 [3.5; 14] years. In all patients we identified Cystatin C level and calculated glomerular filtration rate using different methods. Cystatin C is a reliable marker of glomerular filtration rate in DM2 patients. It enables to diagnose chronic kidney disease in normal albumin excreted with urine, i.e. at early stages of diabetic nephropathy. The determination of this value by cystatin C in boundary glomerular filtration rate level of under 60 ml/min/1.73 m² is more accurate than that calculated by Cockcroft–Gault and MDRD formulae. We found in this study that eGFR by CKD-EPI equation was closely was to each other as compared to MDRD. Serum Cystatin C estimation is a useful approach for detection of renal impairment among elderly CKD patients. This would help in reducing the burden of chronic kidney disease (CKD) in the near future.

Keywords: Cystatin C, Chronic kidney disease, Creatinine.

ASSOCIATIONS BETWEEN OBESITY, HIGH PURINE CONSUMPTIONS, AND MEDICATIONS ON URIC ACID LEVEL IN HYPERURICEMIA PATIENTS WITH ALLOPURINOL (STUDY AT NEPHROLOGY HYPERTENSION AMBULATORY DR. SAIFUL ANWAR HOSPITAL MALANG)

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ABSTRACT

Hyperuricemia is the increase of blood uric acid level. It exceeds normal amount. There are many factors that increase uric acid level, such as obesity, high purine consumptions, and medications. The aim of this study was to determine the associations of obesity, high purine consumptions, and medications to uric acid level in hyperuricemia patients with allopurinol. Data were collected through medical records and questionnaires with *cross-sectional* observational design. Data were analyzed descriptively and hypotheses test. The samples of this study were 45 hyperuricemia patients who had gotten allopurinol therapy for a month and they were chosen by the consecutive sampling method. The result of this study showed that there were no statistically significant comparative association (Mann-Whitney test) between uric acid level on obesity, high purine consumptions (seafoods, meats, organ meats, pods), and medications (furosemide, low dose aspirin, hydrochlorotiazide, spironolactone) with consecutive significance values 0.193; 0.420; 0.469; 0.054; 0.398; 0.631; 0.773; 0.216; 0.246. Besides, there were no statistically significant association correlations (Spearman test) between uric acid level on obesity, high purine consumptions (seafoods, meats, organ meats, pods), and medicines (furosemide, low dose aspirin, hydrochlorotiazide, spironolactone) with consecutive significance values 0.197; 0.426; 0.476; 0.053; 0.404; 0.637; 0.776; 0.220; 0.250. The conclusions of this research were not statistically significant comparative and not statistically significant correlation between obesity, high purine consumptions, and medications on uric acid level in hyperuricemia patients with allopurinol.

Keywords: Allopurinol, Hyperuricemia, Obesity, Purine consumptions.

ANTIDIABETICS DRUG USE EVALUATION AND DRUG RELATED PROBLEMS (DRPs) IN TYPE 2 DIABETES MELLITUS OUTPATIENTS AT JAKARTA HOSPITAL

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ABSTRACT

Pharmacists play an important role in ensuring that drugs are used appropriately, safely, and effectively. This can be done by evaluating the use of drugs and identifying, preventing, and resolving drug related problems (DRPs). The purposes of this study were to evaluate the use of antidiabetics in type 2 diabetes mellitus patients based on the Indonesian Endocrinology Association (PERKENI) Guidelines and to identify DRPs. This was a descriptive study with. Data was gathered retrospectively from the outpatients medical records during June until December 2014. The inclusion criteria were outpatients diagnosed with type 2 diabetes mellitus, with comorbidities and received oral antidiabetics or insulin at Jakarta Hospital. There were 163 patients that met the inclusion criteria. Fifty nine percent of diabetic outpatients were women, 80.98% were in age group 30-59 years old, and 79.75% were diagnosed with complications. The results from the drug use evaluation indicate that the single most widely used antidiabetics was metformin (41.18%); and the most common combinations were Biguanides and Sulphonylurea group (58.95%). Based on the A1C level, there were 94 patients that received the proper treatment according to the guideline. The dose used were 100% correct and the compliance of the patients to visit the hospital routinely were 98%. The incidence of DRPs discovered in this study were adverse drug reactions (49.35%), unnecessary drug therapy (5.2%), dosage too low (1.95), improper drug selection (0.65%), patient require additional drug therapy (0.65%) and patient compliance issues (42.21%). The total number of DRPs identified by pharmacist were 154 cases.

Keywords: Drug use, Drug related problems, Diabetes mellitus, Outpatients.

HOW FAR REGULATION AND ORGANIZATION PREPARED BY GOVERNMENT IN ACT IMPLEMENTATION HALAL PRODUCT GUARANTEE (JPH ACT) SPECIALLY FOR DRUGS, TRADITIONAL MEDICINES, COSMETICS AND FOODS

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ABSTRACT

Since 2014, the Law on Halal Product Guarantee has been rolled out, but until now they have not seen the readiness of regulation derived from Act JPH these, as well as with the establishment of the organizers of Halal Product Guarantee (BPJPH) under MORA and the strengthening of Institutions Examining Halal (LPH). The issue of halal products, today are becoming more prominent, especially Indonesia with a Muslim majority population. It's only natural to have medicinal products, traditional medicines, cosmetics, and food that is halal. This study aimed to assess the regulation time and the readiness of regulatory law is derived JPH, such as Government Regulation (PP), the Presidential Decree (Decree) Regulation (Candy) Related and formation BPJPH, with parameters: internal constraints, external constraints, gap analysis of institutions handling the halal product assurance, perceptions of business operators associations / producers in the field of medicine, traditional medicine, cosmetics, and food, public perception, and the perception of the public halal products. This study used rapid evaluation method comprising: Assessing legal protection before and after the enactment JPH; Certification Halal medicinal products, traditional medicines, cosmetics, food before and after the enactment JPH; Evaluation of regulatory policy in the field before and after the enactment JPH; An alternate solution JPH regulatory policy implementation. Before the enactment JPH, there are two institutions involved in the halal certification, the MUI and LPPOM MUI. After the enactment of Law JPH, will further strengthen the halal certification, with BPJPH and LPH (LPPOM MUI and LPH formed by organizations or universities). The government has not yet formed BPJPH affiliated to the Ministry of Religion. Since October 17, 2014 have not been published a road map and time line BPJPH. Draft PP / regulation / Candy concerned have not been socialized to associate businesses medicine / traditional medicine / cosmetics / food. Strengthening institutions involved in the implementation of the Law JPH the absolute. Coordination and synchronization through the Ministry of Coordination to the President needs to be done. The lack of coordination level government agencies in the implementation of the Law JPH. Required the involvement of the President to the Coordinating Ministry for the implementation of the Law JPH, Differences in perception between business community pharmacy with the implementation of Law JPH.

Keywords: Law JPH, BPJPH, LPH, Halal Certification, Weak Coordination.

FLAME EMISSION SPECTROSCOPY FOR ANALYSIS OF SODIUM-POTASSIUM IN URINE OF SUBJECT WITH HIGHER SYSTOLIC AND DIASTOLIC BLOOD PRESSURE AFTER SALT INTERVENTION

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ABSTRACT

Flame emission spectroscopy (SEN), analytical methods for determination of the metal content based on measurements of emissions, can be applied to the analysis of sodium and potassium in the urine. A diet high in sodium salts has long been associated with the risk of hypertension, stroke, and other cardiovascular diseases. Therefore, a diet with reduced sodium and increased potassium intake has been recommended for patients with hypertension as a non-pharmacological strategy to control blood pressure. This study was conducted to determine the effect of dietary salt on sodium and potassium equilibrium in urine of volunteers in conjunction with the risk of hypertension. Volunteers (n = 11) were assigned as control group with normotensive (n = 3) and intervention group with prehypertension (n = 8). Volunteers given dietary salt intake through food for a week and do 24-hour collection of urine samples. Determination of sodium and potassium levels in urine performed using flame emission spectroscopy (SEN). Results showed lower blood pressure did not correlate with the balance of sodium and potassium in the urine, but there are significant differences between the control and test groups (p-value of each <0,05). In addition, the obtained results that the range of systolic and diastolic positively correlated with ethnicity and BMI and negatively correlated with age, group and duration of salt. It can be concluded that dietary salt formula can be used for the management of hypertension.

Keywords: Salt diet, Hypertension, Sodium, Potassium, Flame emission spectroscopy

A HIPOGLYCEMIC ACTIVITY COMPARISON OF TEN PLANTS' EXTRACT IN MICE INDUCED GLUCOSE

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ABSTRACT

Diabetes mellitus is a metabolic disease with high prevalence in Indonesia (5,8%) for the age of 20-79 years old. From 9 million diabetic patients, 4.8 million of them were undiagnosed patients, which was predicted that would be 21,3 million patients in 2030 and increase about 10,1% in 2035. As the second largest country in term of biodiversity, Indonesia has 30 000 flowering plant species, where approximately 7,000 species are recognized as medicinal plants within 950 species have medicinal functions. Nevertheless, there were only 20-22% of them showed the hypoglycemic activity according to the previous study. This study was conducted to compare hypoglycemic activity of *Mangifera indica* L. leaves, *Persea americana* Mill. leaves, *Acorus calamus* L. rhizome, *Phyllanthus niruri* L. herb, *Syzigium cumini* (L.) skeels bark, *Zingiber officinale* Roscoerhizome, *Moringa oleifera* Lam. leaves, *Tamarindus indica* L. seed, *Momordica charantia* L. fruit and *Azadirachta indica* A. Juss. leaves, at the same dose of 300 mg/kg oral administration in mice induced Glucose Tolerance Test. The result showed that *Mangifera indica* L. leave extract (46,36%) has the best activity in reduction of blood glucose level, followed by *Zingiber officinale* Roscoe, *Acorus calamus* L., *Tamarindus indica* L., *Momordica charantia* L., *Syzigium cumini* (L.) Skeels, *Phyllanthus niruri* L., *Persea americana* Mill., *Azadirachta indica* A. Juss.

Keywords: Hypoglycemic activity, Medicinals Plants, Glucose Tolerance Test, *Mangifera indica* L.

POTENCY OF DRUGS INTERACTIONS AMONG PSYCHOTROPIC PRESCRIPTIONS: A RETROSPECTIVE STUDY AT LOCAL PHARMACIES IN BANDUNG

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ABSTRACT

Drugs prescribing with more than one kind of drug (polypharmacy) could increase a risk of drug-drug interactions occurrences. Drug interactions could harm patients, including drug interactions in psychotropic drugs. This study conducted to determine potential drug-drug interaction among psychotropic prescribing. This study conducted by using retrospective data during 2014 at a local pharmacy in Bandung. These study show that 334 of 1.732 psychotropic prescriptions had potential of drug-drug interaction that may occur and 111 of those prescriptions are classified as Moderate class. Percentage of prescriptions with drug-drug interactions from both pediatrician and neurological surgeon respectively reached 1.8%. While the percentage of prescriptions in internist was 2.7%, obstetricians reached 10.8% The most common drug-drug interaction occurred in general practitioner, which reached 82%.

Keywords: Interactions, polypharmacy, psychotropic, pharmacy prescriptions

**ANALYSIS OF FACTORS AFFECTING BENIGN PROSTATIC HYPERPLASIA TREATMENT COST
IN SOETOMO HOSPITAL SURABAYA****IVONNE SOELIONO^{1*}, SUHARJONO², TARMONO³****¹Master of Clinical Pharmacy, Airlangga University, Clinical and Community Pharmacy Department Faculty of Pharmacy Widya Mandala Catholic University Surabaya, Indonesia. ²Clinical Pharmacy Department, Faculty of Pharmacy Airlangga University, Indonesia.****³Department of Urology, Faculty of Medicine, Airlangga University, Indonesia.****E-mail: ivonne.soeliono@gmail.com****ABSTRACT**

Hospital inpatients charged to a wide range of cost in accordance hospital rates. Each component of these costs will ultimately make up the total cost. The length of stay (LOS) influences the total costs. LOS itself was influenced by factors such as age, the number and type of comorbidities, the number and type of pre and post-operative complications, and the type of surgery. The purpose of this study was to analyze the influence of factors on LOS and total costs as well as to analyze the cost component, which is the main constituent of total costs in hospitalized patients with a primary diagnosis of BPH. This study was an observational, retrospective, cross-sectional with cost from hospital perspective. Simple random sampling was carried out as a result there was 25 hospitalized patients with BPH in January 2014-June 2015. Multivariate linear regression conducted to see the effect of factors on LOS and total costs and the percentage of each cost component to the total cost was calculated. The results showed the influence of comorbidities types, pre-operative complications types, and the surgery type to LOS. There was also influence of comorbidities type, number and type of pre-operative complications, surgery type, age, and LOS to total cost. The main constituent component of total cost is surgery cost, laboratory cost, and medication cost. The hospital is recommended to control laboratory cost, medication cost, and pre-operative waiting time to reduce total cost.

Keywords: Factors, Total cost, BPH.

LONG-TERM SAFETY EVALUATION OF TAMARIND PULP (*TAMARINDUS INDICA* L.) WATER EXTRACT

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ABSTRACT

Tamarind pulp water extract has an anti-obesity effect in high fat or high carbohydrate induced-rats. To use tamarind pulp water extract as an anti-obesity traditional medicine, we need to evaluate the safety of tamarind pulp water extract for long term use. The objective of this research was to evaluate the safety of long term administration of Tamarind pulp water extract. Tamarind pulp was extracted with hot distilled water and freeze-dried to obtain dry extract. Animals were divided to six groups, 20 animals per sex per groups. Control group and satellite control group received CMC-Na 0.5% 1 mL/100gram bw per day. Treatment groups were received tamarind pulp water extract at the doses 75 mg/kg bw per day, 200 mg/kg bw per day, 1000 mg/kg bw per day and 1000 mg/kg bw per day (satellite) for six months. Animals behaviour, body weight, organ index, urine pH, urine density and histopathology of the animals were evaluated after six-months administration of tamarind pulp water extract. After six months administration of tamarind pulp water extract, there are no significant changes in animal behaviour, urine pH, urine density, and body weight of the tested group compared to the control group. Body weight of male rats in satellite 1000 mg/kg bw group are significantly increased in week 30 compared to satellite control group (410,25±54,68 vs 440,70±38,90). Spleen index of female rats of 200 mg/kg bw group is reduced (0,21±0,03 vs 0,24±0,06). Uterus index of female rats in 75 mg/kg bw group is reduced (0,23±0,06 vs 0,29±0,12). Kidneys index of male rats in 1000 mg/kg bb group is increased (0,70±0,07 vs 0,63±0,05). This study showed that long term administration of tamarind pulp water extract were save and well tolerated.

Keywords: *Tamarindus indica* L., Tamarind, Long Term Toxicity.

ROLES OF PALIASA (*KLEINHOVIA HOSPITA* L.) LEAF EXTRACT ON DOXORUBICIN ACUTE TOXICITY IN RATS**YULIA Y. DJABIR¹, MUHAMMAD A. ARSYAD², SARTINI¹, SUBEHAN¹**¹Faculty of Pharmacy, Hasanuddin University, Indonesia. ²Faculty of Medicine, Hasanuddin University, Indonesia. Email: yuliyusrini@yahoo.com**ABSTRACT**

Doxorubicin (DOX) chemotherapy may cause cardiac, hepatic and renal toxicities that lead to complication in cancer patients. Paliasa leaf (*Kleinhovia hospita* L) has been empirically used in South Sulawesi, Indonesia to treat hepatitis and hepatotoxicity. This study aimed to examine the protective effects of Paliasa to reduce DOX toxicity not only in liver, but also in cardiac and renal functions. Thirty male rats were assigned to the following groups: Group I was given NaCMC 1% (controls), group II was given NaCMC 1% and DOX i.p injection (25 mg/kg); group III, IV and V were treated with Paliasa extract 100, 250 and 500 mg/kg orally for 5 days, respectively, prior to DOX i.p injection. After 24 hours, blood was collected for biomarker analysis, including cardiac (CK-MB and AST), liver biomarker (AST and ALT), and renal biomarkers (urea and creatinine). The result showed that DOX significantly increased CK-MB, AST, ALT, urea and creatinine levels (group II) compared to controls ($p < 0.05$). Administration of Paliasa extract in any dose significantly lowered the liver specific biomarker ALT. However, only at dose of 250 mg/kg (Group IV), Paliasa extract significantly reduced AST and CK-MB levels ($p < 0.05$). Lower urea and creatinine levels (renal biomarkers) were found in groups III, IV and V compared to group II, but it was not statistically significant. Paliasa extract protected the rats from liver toxicity induced by DOX, but only dose 250 mg/kg was demonstrated to reduce cardiac toxicity. Paliasa extract only marginally improved renal biomarkers in DOX-treated rats.

Keywords: Doxorubicin, Toxicity, Paliasa extract.

PHARMACIST PROVIDED COUNSELING IMPROVES MEDICATION ADHERENCE AMONG HYPERTENSIVE PATIENTS

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ABSTRACT

The main objective of the study is to evaluate the impact of pharmacist-provided counseling among hypertensive patient. The research was conducted using *control group design with pretest posttest* design to evaluate the impacts of pharmacist-provided counseling on the medication adherence and further on blood pressure control among hypertensive patients. Subject who patients receiving antihypertension therapy divided into two groups, consisting of control group (not receiving counseling the researcher) and intervention group (follow-up by researcher every 2 weeks during a 3-month period). Data collection was conducted by interview and completion of Morisky Medication Adherence Scale questionnaire. Patients were selected randomly and group into, while value of blood pressure were taken from medical record. They were observed for one month. There were 106 research subject consisting of 53 patients for intervention group and 53 patients for control group. There was significant difference in the Morisky Medication Adherence Scale category between the control group and the intervention group ($p < 0.01$). The significant decrease of the average of blood tension occurred in the intervention group of 19.2 point ($p < 0.01$) of systolic blood pressure and 6.03 point ($p < 0.01$) of diastolic blood pressure, while there was no significant means of change in the control group. The result of correlation test between the adherence and the therapy result indicate a positive significant correlation between the category of Morisky Medication Adherence Scale and systolic blood pressure ($p < 0.01$; $r = 0.725$) and diastolic blood pressure ($p < 0.01$; $r = 0.205$). This research concludes that pharmacist-provide counseling improves medication adherence and further improves blood pressure control among hypertensive patients.

Keywords: Adherence, Blood pressure, Counseling, MMAS.

EPITOPE PREDICTION TO DEVELOP LECTIN-LIKE OXIDIZED-LDL RECEPTOR-1 (LOX-1) DNA VACCINE AS ANTI-ATHEROSCLEROSIS PREVENTIVE THERAPY

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ABSTRACT

Atherosclerosis is a chronic inflammation condition which leads to other manifestations, such as cardiovascular disease. At present, cardiovascular disease is still being the major cause of death in the world. Atherosclerosis is started from oxidized LDL (ox-LDL) uptake into endothelial cells through Lectin-like oxidized-LDL receptor-1 (LOX-1) as its main receptor. Therefore, the inhibition of this receptor is expected to prevent the atherosclerosis development. *In silico* study reduces time and cost needed to develop conventional vaccine. It also brings higher efficacy and safety. Development of LOX-1 DNA vaccine was began with database collection in Protein Data Bank and Uniprot. Epitope prediction was conducted using *NetMHC 4.0*, *NetCTL.Pan 1.1*, *NetMHCStab 1.0*, dan *PickPocket 1.1* to predict the T cells epitope. The result revealed that the LOX-1 was predicted to have two epitopes, FLYSPWWCLA and WLWEDGSPLM. The predicted epitopes have been confirmed to have no similarity with other human proteins. Therefore, it can be used as a reference to develop atherosclerosis vaccine candidate.

Key Words: Atherosclerosis, Epitope, *In silico*.

ASSOCIATION BETWEEN VALUE-ADDED PHARMACY SERVICES AND PATIENT SATISFACTION: A MALAYSIAN EXPERIENCE

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ABSTRACT

Value-added service (VAS) was implemented by Ministry of Health of Malaysia to ease the patients in obtaining their refill medications in the government hospitals and clinics. A study was conducted to compare patient satisfaction within the value-added pharmacy services and traditional counter service (TCS). A survey was conducted with randomly selected patients who used either TCS (n=108) or VAS (n = 162) to collect their medication refills. A questionnaire was used to obtain respondents demographic information and satisfaction. Satisfaction scores of two group which measured using Lickert Scale were compared using correlation analysis. Compared with TCS users, more VAS users were mostly working personals (65.4 vs 35.6%, $p < 0.001$) and monthly income higher than MYR3000 (72.59 vs 27.41%, $p < 0.001$). VAS users had higher tertiary education (58.46 vs 41.54%, $p > 0.05$). Majority of the respondents were VAS users and based on the satisfaction scores, VAS users were generally more satisfied (60 vs 40%, $p > 0.05$) than those of TCSs. Delivery pharmacy services users were less satisfied with their expenditure on prescription refills than those using call-and-collect services (10 vs 50%, $p > 0.05$). The study demonstrated the strengths of VAS over TCS in improving patient satisfaction.

Keywords: Patient satisfaction, Pharmacy services, Value-added services, Traditional counter service

OPTIMIZATION OF ETHANOL CONCENTRATION IN EXTRACTION OF EUGENOL FROM GALANGAL RHIZOME

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ABSTRACT

Galangal (*Alpinia galanga*), particularly its rhizome, is widely used as traditional medicine. One of the compounds in galangal is eugenol, which has proven having various pharmacological activities. Aimed of this study was determining optimal ethanol concentration as solvent for extracting eugenol from galangal. Galangal rhizome extraction was done by kinetic maseration at 50 °C with various ethanol concentration as solvent (0%; 30%; 50%; 70% and 96%) with ratio of rhizome and ethanol was 1:10. Extraxt obtained then analyzed qualitatively and quantitatively its eugenol concentration by thin layer chromatography-densitometry with n-hexan – ethyl acetate (4:1) as mobile phase and silica gel 60 F₂₅₄ as stationary phase, at 283 nm wavelength. Result of qualitative analysis showed that extraction of galangal rhizome in 70% ethanol and 96% ethanol was positively containing eugenol. Highest eugenol concentration obtained from galangal rhizome extraction in 70% ethanol, which was 4.85%.

Keywords: Eugenol, Galangal, Extraction.

PROFILE ASSESSMENT FOR HOSPITAL READMISSION AMONG MALE PATIENTS OF ACUTE EXACERBATION CHRONIC OBSTRUCTIVE PULMONARY DISEASE AT SELECTED HOSPITAL IN MALAYSIA

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a common lung disease characterized by airflow limitation that is not fully reversible and is both chronic and progressive. Acute Exacerbation of COPD (AECOPD) is a sudden worsening of COPD symptoms that typically lasts for several days. AECOPD readmission has been one of global concern and was the fifth leading cause of disease burden in Malaysia, both clinically and economically. This study is aimed to determine the readmission rate of AECOPD patients into one of the selected hospital and to compare the management pattern of AECOPD with the Malaysian Clinical Practice Guideline on COPD 2009. This study also aimed to evaluate patient's profile during their re-hospitalization period and to evaluate the cost of treatment during re-admission of AECOPD patients. A cross-sectional retrospective study design was employed, whereby data collection was based upon AECOPD Patient's Medical Record of readmission into the Male Medical ward from 1st January to 31st December 2015 using patient's data collection form. The collected data was analyzed by using SPSS version 21.0 whereby descriptive statistics, Fisher-Exact Test, oneway ANOVA and Paired Sample t-test were utilized. Total sample population collected was 100 AECOPD patients during the study period. Majority of patients aged from 60-69 years old (32%) and 74% of them are Malays. 76% of them were associated with cigarette smoking and 57% were having concomitant disease of cardiovascular disorder. Out of total 100 study population, 32% was readmitted in more than one year since previous hospitalization, while 28% was readmitted within less than 30 days. The longest day of hospitalization spent was 12 days but majority (56%) spent less than 5 days of hospitalization. 100% of study population received management of SPO₂, inhaled SABA, IV corticosteroid or tablet prednisolone, Combinations between Augmentin and Azithromycin (45%) were the common antibiotics prescribed among the study population. Significant statistical difference for medication adherence with readmission days less than 30 days with p-value=0.00 has been observed. The readmission rate of AECOPD was seen highest among Malay aged between 60-69 years old. Medication adherence and smoking revealed to be the major contributing factors for recurrent admissions. The management pattern of AECOPD complied with the Clinical Practice Guidelines for Management of COPD 2009 by MOH, Malaysia. Therefore, the null hypothesis was accepted.

Keywords: Readmission, AECOPD, Acute Exacerbation of Chronic Obstructive Pulmonary Disease, Medication cost, COPD.

THE IMPACT OF PHARMACIST COUNSELLING ON KNOWLEDGE, ADHERENCE, AND QUALITY OF LIFE OF HIV/AIDS PATIENTS AT VCT POLYCLINIC IN A PUBLIC HOSPITAL IN PADANG, INDONESIA

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ABSTRACT

The problems in the treatment of HIV/AIDS are very complex. Anti-retrovirus (ARV) therapy is a therapy that aimed to boost the immune system of the HIV/AIDS patients. In this therapy, adherence from the patients is a must to achieve the output therapy and to improve the patient's quality of life. The pharmacists are able to play their role to help patients overcome the barriers of adherence by giving counselling to improve patient's knowledge about the medications and diseases. A single group pretest-posttest design with quasi-experimental was conducted to evaluate the impact of pharmacist counselling on the knowledge, adherence, and quality of life in HIV/AIDS patients in VCT polyclinic, in a public hospital in Padang. Knowledge, adherence, and quality of life were assessed by using a validated instrument in the first and second visit. A total of 124 patients completed the study. The data was analyzed by using Mann-Whitney, Wilcoxon test, paired t test and independent t-test. The result showed that the knowledge, adherence and quality of life of the patients improved significantly ($p > 0.05$). Furthermore, the study found that the characteristic of demography (sex, age, education and occupation) had no influence to the outcome of knowledge, adherence and quality of life of the patients. The study showed that pharmacist counselling has a positive influence on knowledge, adherence, and quality of life of HIV/AIDS patients.

Keywords: Pharmacist counselling, Quality of life, KAP research, HIV/AIDS patients

OVERUSE OF ACID SUPPRESSANT DRUGS AS STRESS ULCER PROPHYLAXIS IN ICU INPATIENTS OF RS X PURWOKERTO

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ABSTRACT

In Indonesia, as many as 93% of ICU inpatients using acid suppressant drugs for stress ulcer prophylaxis, particularly ranitidin. Inappropriate use of stress ulcer prophylaxis in ICU inpatients can lead to potential adverse drugs reaction and increase the treatment cost. This study aimed to determine the appropriateness of acid suppressants drugs as stress ulcer prophylaxis and the cost saving of inappropriate use of stress ulcer prophylaxis. This study was conducted using retrospective method of ICU inpatients' medical records and financial documents. Samples were selected from all ICU inpatients of RS X Purwokerto from June 2014 until May 2015 by simple random sampling. Data of 70 patients were analyzed using ASHP Guideline of Stress Ulcer Prophylaxis (1999) to assess appropriateness of indication and dosage. Potential cost saving were calculated from treatment cost of acid suppressant drugs in patients which had inappropriate indication. The treatment cost before and after analysis then compared using wilcoxon test. The result showed that 22.86% were having inappropriate indication of acid suppressants drug used for stress ulcer prophylaxis. From 72.14% who had appropriate indication of stress ulcer prophylaxis, only 33.33% were having appropriate dosage of acid suppressant drugs for the indication. Total potential cost saving of inappropriate indication was 522,075 IDR and significantly lowering the treatment cost in patients ($p < 0,05$).

Keywords : Acid suppressant drugs, Stress ulcer prophylaxis, Cost saving.

COST SAVING OF STRESS ULCER PROPHYLAXIS USE IN NON ICU INPATIENTS**HENING PRATIWI*, LAKSMI MAHARANI, IKA MUSTIKANINGTIAS**

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ABSTRACT

Stress ulcer is an acute inflammation of the gastric mucosa. Sixty five percents of acid suppressant drug use as stress ulcer prophylaxis inconcordance with consensus review of patients need, so 55% of them were stopped. Inappropriate use of acid suppressant drugs around 62%-67% , it potentially causes adverse drug reaction risk and increases the treatment cost. This research aimed to calculate the potency of cost saving from stress ulcer prophylaxis therapy inappropriateness in non ICU inpatients. It was a non-experimental research which held in medical record and financial department of "X" hospital in Purwokerto. This study was conducted using retrospective method, then data were collected by using simple random sampling method. Sample were collected from non ICU inpatients in May 2015. There were 80 patients include to the inclusion criteria. We referred ASHP guidelines of stress ulcer prophylaxis (1999) for non ICU patients, then *cost minimization analysis* was used to calculate cost saving. The results showed that the percentage of indication appropriateness was 32.5%, and the percentage of dose appropriateness was 18%. The total cost of the patient before cost saving calculation was IDR. 31,744,968 and total cost after cost saving calculation was IDR. 2,500,547. So the total of potential cost saving of inappropriate indications was IDR. 6.739.498. Data were examined using *Wilcoxon Sign Rank Test*, and the results showed significant level 0,000 ($p \leq 0,05$). There was a significant difference between the total cost before and after cost saving calculation.

Keywords: Stress ulcer prophylaxis, non-ICU, *Cost Minimization Analysis*.

PHARMACIST'S HOME CARE IMPACT TO TYPE 2 DIABETES MELLITUS PATIENTS ADHERENCE AND GLYCAEMIC CONTROL IN BANYUMAS REGION

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ABSTRACT

A pharmacy diabetes care model resulted a significantly improve in clinical and humanistic outcome. The aim of this study was to assess the impact of pharmacist's home care on patient adherence and glycemic control in Type 2 Diabetes Mellitus (T2DM) in Banyumas region. It was an experimental study in T2DM patient, multisite, pre-post measure in Banyumas region, during December 2015 until June 2016. All of respondents divided into two groups: control and intervention. The data of adherence and glycemic control parameter were taken twice, by pre-test and post-test. Pharmacist's home care was given to intervention group after pre-test, and to control group after post-test by community pharmacist. Respondents in the control group was given usual care during the intervention group received home care. Data assessed was difference score between pre-test and post-test of adherence score and glycaemic control parameter in each group. The assessment of adherence score using Morisky Medication Adherence Scale-8 (MMAS-8) questionnaire, while glycaemic control parameter using HbA1c. There were 35 community pharmacists with 90 respondents (49 and 41, intervention group and control group respectively) until the end of therapy. The data showed baseline of respondents were same on pre-test score of adherence and HbA1c. For the intervention group, there were significantly improvement in both MMAS-8 score ($p=0,000$) and HbA1c ($p=0,040$). No improvement HbA1c showed in control group ($p=0,721$), but there were improvement in MMAS-8 score ($p=0,000$) like intervention group. A few of community pharmacists derived both respondents group, intervention and control, it may causes both group showed adherence improvement. Pharmacist's home care resulted in significant improvement in adherence and HbA1c. Thus, community pharmacists can contribute to improving adherence and glycaemic control for T2DM in Banyumas region.

Keyword: Type 2 Diabetes Mellitus, Pharmacist's home care, Adherence, HbA1c

KAEMPFEROL FROM *STELECHOCARPUS BURAHOL*, (BL.) HOOK F. & TH. LEAVES**DINIATIK^{1,2*}, SUWIJIYO PRAMONO¹, SUGENG RIYANTO¹**¹Faculty of Pharmacy, Gadjah Mada University, Indonesia. ²Faculty of Pharmacy, Muhammadiyah University of Purwokerto, Indonesia.
Email: diniatik@yahoo.com.au**ABSTRACT**

Stelechocarpus burahol, (Bl.) Hook f. & Th. is a plant widely distributed in Java Province of Indonesia. The aim of this study was to identify compounds from the leaves of *S. burahol* that exhibited activity as xanthine oxidase inhibitor. The leaves were extracted with methanol and hydrolyzed with methanol HCl, then partitioned sequentially with chloroform and ethyl acetate. The fractions of ethyl acetate were separated by column chromatography with cellulose as stationary phase and methanol 50% as mobile phase. From this purification, three compounds had been identified and one of them is Kaempferol. This compound has activity as xanthine oxidase inhibitor with IC₅₀ values ranging from 0.27 to 0.45 µg/mL. Kaempferol showed the highest inhibition of 0.27 µg/mL.

Keywords: Kaempferol, Xanthine Oxidase Inhibitor, *Stelechocarpus burahol*, (Bl.) Hook f. & Th.

HEALTH-RELATED QUALITY OF LIFE (HRQOL) OF TYPE 2 DIABETES MELLITUS OUTPATIENTS AT DR. SARDJITO HOSPITAL YOGYAKARTA: AN INSULIN-BASED THERAPY APPROACH

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ABSTRACT

Diabetes Mellitus Type II is a lifelong disease which needs an intensive therapy to maintain stable blood sugar levels. Insulin has proved as an effective treatment modality for type 2 diabetes mellitus patient. The aim of this study was to evaluate the effect of insulin based therapy (insulin monotherapy-combination therapy of insulin with oral hypoglycemic agents) towards the health related quality of life in type 2 diabetes mellitus outpatient at Dr. Sardjito Hospital, Yogyakarta. This study was a descriptive cross sectional study design. Data was derived from interview and medical records from patients in Endocrinology Clinic Dr. Sardjito Hospital between July 2012-March 2013. Inclusion criteria were type 2 diabetes mellitus outpatient with insulin based therapy, no communication problem and willing to participate this study. The participants were excluded if they have a mental and language retardation, uncomplete medical records, and pregnant woman. The quality of life was measured by Diabetes Quality of Life Clinical Trial Questionnaire (DQLCTQ). QOL was analyzed statistically using Mann Whitney based on the type of therapy (insulin monotherapy and combination therapy of insulin-oral hypoglycemic agents). The results were reviewed for 137 patients, the largest percentage (73%) received combination therapy while the smallest percentage (27%) were single therapy. The type of therapy (monotherapy insulin-combination therapy of insulin with oral hypoglycemic agent) was significantly influence the energy domain ($p= 0,027$).

Keywords: Health related quality of life, Type 2 diabetes mellitus, Insulin based therapy.

SURVIVAL TRENDS IN HIV/AIDS PATIENTS WITH TB AS CO-MORBIDITY DURING HAART TREATMENT AT INFECTIOUS DISEASE CLINIC, MALAYSIA

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ABSTRACT

The aim of this study is to explore and observe the survival function of HIV/AIDS patients with TB as co-morbidity and received highly active antiretroviral therapy. This study was an observational retrospective study comprising patients enrolled diagnosed HIV infection and received HAART therapy from January 2007-December 2012. This study conducted at Infectious Disease Department of Hospital Pulau Pinang, Malaysia. Patient's socio-demographic details with clinical features were recorded. Data was descriptively analyzed using statistical package for social sciences (SPSS 20). From 792 patients that received HAART therapy, 607 (76.6%) were male and 185 (23.3%) were female. Out of 144 (18.18%) patients had experienced TB as co-morbidity associated HIV/AIDS infection. Out of 117 (81.2%) TB as co-morbidity were reported in male patients while 27 (18.7%) in female patients. On Chi-square test, gender and the occurrence of TB associated with HIV/AIDS $p=0.14$. Out of 144 (18.8%), 90 (62.5%) patient in 30-50 years experienced TB as co-morbidity associated HIV/AIDS with a statistical association of $p=0.23$. Out of 81 (56.2%) patients was observed in Chinese and 35 (24.3%) in Malay ethnicity with statistical association of $p=0.87$. Median follow up time of all patients was 36 months or 3 years (inter-quartile range 33.5-38.4). Survival trend in the beginning of the HAART showed poor survival, however later on with continuation with the therapy shows better survival. On multivariate Cox regression, survival showed better after 22 months of the HAART therapy. However, the survival function was better in female (HR 1.01, 95% CI 0.85 - 1.21, $p=0.83$) than in male patients (HR 1.03, 95% CI 0.85 - 1.25, $p=0.70$). The study indicates higher survival function in female patients of HIV-TB, relation of age, gender and the treatment duration of HAART on survival function of HIV-TB patients. However, a multicenter study with a large sample size may provide us with better understanding of this relationship.

Keywords: HIV/AIDS, Survival trends, Tuberculosis.

PHARMACIST'S COUNSELLING EFFECTS ON SATISFACTION WITH INHALED ASTHMA TREATMENT FOR ASTHMA PATIENT UNDERGOING OUTPATIENT CARE**MUTIARA HERAWATI^{1*}, LUKMAN HAKIM², I DEWA P. PRAMANTARA³****¹Post Graduate Student of the Faculty of Pharmacy of Gadjah Mada University, Indonesia. ²Faculty of Pharmacy of Gadjah Mada University, Indonesia. ³Department of Internal Medicine and Geriatric of Dr. Sardjito General Hospital, Indonesia.****Email: mutiaraherawati89@gmail.com****ABSTRACT**

Asthma is a chronic inflammatory disorder in the respiratory tract. Chronic inflammation occurs in the respiratory tract which is hyper-responsive could lead to airflow obstruction and restriction due to bronchoconstriction, mucus clots, and increased inflammation when exposure emerges on risk factors. One of many therapies for asthma is inhalers. Asthma patients would not be able to use inhalers correctly, unless they are given clear instructions of how to use them. The research is meant to find out whether counseling can result in higher satisfaction over the use of inhalers that it is expected to be able to control asthma symptoms for patients with asthma, given inhalation therapy at the outpatient polyclinics of regional general hospitals of Yogyakarta and Sleman. The research included 75 male patients consists of men and women aged 18-70 years with various educational backgrounds, employment status, duration of asthma, asthma severity stage, and its concomitant diseases. The subjects were purposively divided into 2 groups, consisting of 38 patients in a control group and 37 patients in an intervention group. This study was experimental research design using pre test-post test with control group. The assessment on the level of asthma control, used the Asthma Control Test questionnaire (ACT) while for the satisfaction level the questionnaires of FSI-10 (Feeling of Satisfaction with Inhaler) was applied. The outcome of the research using Mann Whitney analysis test showed the increase in the satisfaction score over inhalation therapy in the counseling and control groups were 5.45% and 0.97% respectively. From the outcome, it could be concluded that counseling could improve asthma control and increase satisfaction over inhalation therapy faster.

Keywords: Asthma, Inhaler, Asthma control level, Satisfaction with inhaled.

SPERMICIDE GELS FORMULATION FROM THE EXTRACT OF DURIAN'S (*DURIO ZIBETHINUS* MURR.) CORTEX

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ABSTRACT

Durian (*Durio zibethinus* Murr.) cortex extract is a natural spermicide ingredient which has an immotile effect against human spermatozoa *in vitro*. Chemical content in Durian's cortex extract is poorly soluble in water thus solid dispersion process is required. The purpose of the study was to determine the characteristic profiles of spermicidal gel formulation from the extract of Durian's cortex. This research used solid dispersion method with PEG 6000 variation of 2% b/b (F1); 4% b/b (F2), 6% b/b (F3), and 10% b/b (F4). Characteristics test which conducted were organoleptic, homogeneity, pH value, viscosity, spreading and adhesion test of gel. Results showed variations of PEG 6000 had no effect in organoleptic and homogeneity of gel, increased viscosity and adhesion of gel but reduce pH value and spreading of gel. Variations of PEG 6000 affect the characteristic profile of spermicide gel from extract of Durian's cortex (Sig < 0.05).

Keywords: *D. zibethinus*, Spermicide gels, Solid dispersion, PEG 6000.

ALLELE FREQUENCIES OF TWO MAIN METFORMIN TRANSPORTER GENES: *SLC22A1* RS628031 A>G AND *SLC47A1* RS2289669 G>A IN INDONESIAN POPULATION**VITARANI D. A. NINGRUM^{1,2*}, ZULLIES IKAWATI², AHMAD H. SADEWA³, ROBIKHUL IKHSAN⁴**¹Department of Pharmacy, Islamic University of Indonesia, Indonesia. ²Faculty of Pharmacy, Gadjah Mada University, Indonesia.³Department of Biochemistry, Faculty of Medicine, Gadjah Mada University, Indonesia. ⁴Department of Internal Medicine, DR. Sardjito Hospital, Indonesia. Email: vitarani.ningrum@uii.ac.id, vitarani.da.n@mail.ugm.ac.id**ABSTRACT**

Single nucleotide polymorphisms (SNPs) in genes encoding metformin transporters play important role on interindividual variability response of metformin. Organic Cation Transporter (OCT) 1 encoded by the *SLC22A1*, is responsible for influx metformin into hepatocyte while the excretion of metformin into bile and urine is primarily facilitated by MATE1 (gene *SLC47A1*). This study determined the distribution of allele frequencies rs628031 A>G (M408V) OCT1 and rs2289669 G>A MATE1 in Indonesian type 2 diabetes patients. The study included 86 type 2 diabetes patients with metformin as the mainstay therapy, aged 30-60 years from 6 primary health centres. Genotyping was determined using PCR-RFLP method. G Allele frequency of rs628031 and rs2289669 A allele were 41.55% and 52.94%, respectively. No statistically different of alleles frequency between males and females ($P>0.05$). The frequency of identified *SLC22A1* gene rs628031 in the Indonesian population was quite similar to the frequencies observed in African-Americans and other Asian Population as well as *SLC47A1* gene rs2289669 in Chinese. The high frequency of the rs628031 G allele and rs2289669 A allele require further pharmacogenetics study of polymorphisms-related to the variability of metformin pharmacokinetics and pharmacodynamics in Indonesian population.

Keywords: SNPs, *SLC22A1* gene, *SLC47A1* gene, Metformin, Indonesian population.

THE EFFECTS OF SHORT MESSAGE SERVICE (SMS) REMINDERS ON MEDICATION ADHERENCE AND BLOOD PRESSURE OUTCOME IN HYPERTENSION PATIENTS: A RANDOMIZED CONTROLLED STUDY

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ABSTRACT

Hypertension patients who are not adhere to their medication could have undesirable impacts on blood pressure control hence intervention is required to enhance patient's adherence. The aim of this research is to identify influence in short message service (SMS) reminders on the level of medication adherence and blood pressure outcomes of patients with hypertension in BLUD Ulin Hospital, Banjarmasin. This research is randomized controlled study. Ninety two hypertension patients who had low and moderate level of baseline adherence based on The Morisky Medication Adherence Scale (MMAS) questionnaire were randomized (1:1) into control and intervention group. Patients in intervention group received scheduled daily SMS reminders, whereas those in the control group were not exposed to any intervention. Followed fourteen days, participants were observed for alteration of MMAS questionnaire's scores and the outcome of blood pressure. In intervention group, there was a significant increase of MMAS score after fourteen days of SMS reminders ($p < 0.001$). In contrast, group who did not received intervention had no significant change on MMAS score ($p = 0.480$). Furthermore, participants in intervention group significantly ($p < 0.001$) had a higher average of MMAS score's improvement ($1,70 \pm 0,89$) compared to control group ($0,04 \pm 0,41$). In terms of blood pressure outcomes, intervention group had significant ($p < 0.001$) decrease of systole ($14,56 \pm 5,85$) and diastole ($7,28 \pm 7,04$) blood pressure after intervention than control group ($0,65 \pm 3,26$ and $0,43 \pm 2,94$ respectively). SMS intervention to hypertension patients improves level of adherence and blood pressure outcomes.

Keywords: Short message service, Adherence, Hypertension.

A QUALITATIVE STUDY PERSPECTIVES, EXPECTATIONS AND NEEDS OF EDUCATION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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ABSTRACT

Education in patients with chronic diseases such as COPD, has proven effective in improving the quality of life of patients. More information is necessary to determine the needs of COPD patients in therapy. The authors performed to explore the perceptions, expectations, and needs of COPD patients to education as part of the pharmaceutical services. This study is a qualitative phenomenology analysis in four hospitals in Mojokerto, East Java, Indonesia. The study consisted of 14 patients diagnosed with COPD for at least three months, aged ≥ 40 years old. The patients were interviewed about perceptions, expectations, and education needed. All patients assume that education is very important to do the COPD patients, and some respondents expect the education given by medical practitioner whenever to visited in hospital. This step is often not realized by the hospital so there is rarely a hospital that wants to educate regularly in COPD patients. As a result, treatments of COPD which not optimal and failure. During this time, the respondents are educated only at initial diagnosis by a doctor, and the rest is given only when they ask robustly. Educational materials are in the range on the causes and sometimes in disease processes as well as about the treatment that must be endured. Continuing education for patients with COPD that provides the knowledge and skills that support treatment. The provision of education should not be in the hospital but can be given in outpatient treatment. Pharmacists in its role to monitoring drug therapy should play an active role in the provision of education for COPD patients on an ongoing basis.

Keywords: Perceptions, Expectations, Needs, Chronic Obstructive Pulmonary Disease.

NURSES' KNOWLEDGE AND ATTITUDES TOWARD ADMINISTRATION OF LONGTERM ORAL MEDICATIONS IN PRE-OPERATIVE FASTING PERIOD

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ABSTRACT

The most crucial problem in peri-operative fasting period is the withdrawal of regular medications that could increase the risk of non-surgical complications which may cause harm to the patient undergoing surgery. The aims of this research was to evaluate the influence of nurses' knowledge on pre-operative fasting procedures, age, and work experience on their attitudes and beliefs about withholding oral medications during pre-operative fasting period. The study was a cross-sectional survey of nurses attitude and knowledge in the orthopaedic hospital in Surakarta. Sample was selected by purposive sampling method. Survey instrument was developed to assess nurse's knowledge on pre-operative fasting, assess nurses' attitudes on withholding medication in this period and demographic characteristic of the respondent. The relationship between the level of knowledge and the level of attitude; age and the level of attitudes, length of work (work experience) and the level of attitudes, age and the level of knowledge, work experience and the level of knowledge were analyzed by regression/correlation. The result of the survey which administered to 77 nurses showed that there was a significant relationship between the level of knowledge and the level of attitude (Somers'D directional measures). Nurses who had higher scores in knowledge section of the survey were more confident to deliver or withhold patients' medications ($p=0.002$). However, age or length of work did not have any relationship with either level of knowledge or level of attitude.

Keywords: Pre-operative fasting period, Medicines, Nurses.

KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS SEX AND EMERGENCY CONTRACEPTIVES AMONG FEMALE UNIVERSITY HEALTHCARE STUDENTS IN KUALA LUMPUR AND SELANGOR, MALAYSIA

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ABSTRACT

The major factor limiting the use of emergency contraceptive (EC) may be inadequate information about their effectiveness and availability or unfavourable opinions about their safety due to misinformation. Unwanted teenage pregnancies have a notable detrimental impact on the learners' trajectory and have been associated with jeopardising the students' educational progress and future career prospects. These pregnancies are mostly unplanned and unintended and many are terminated, either legally or illegally. The study was carried to assess the knowledge, attitude and practice towards sex and emergency contraceptives among female University healthcare students. The aim of this study is to assess knowledge, attitude and practice about sex and emergency contraception among female university healthcare students to prevent unintended pregnancy. A cross-sectional survey was conducted among female students at three universities. All girls from a healthcare were included in the study. Data was collected by using self-administered questionnaires at a single point in time in all university that were eligible for the study. Out of total 395 female students, 81.52% (322) had positive attitude towards sex. In this study more than half 72.66% (287) of the respondents reported that they know at least one of the regular modern contraceptive methods. The finding also revealed that 100% (395) of the respondents have heard EC. However, according to the summery index, their actual level of knowledge of EC is generally low 35.4% (140). In this study, of those respondents who have heard of emergency contraceptives, only about 17.22% (68) students have ever used emergency contraception. The findings of the study have shown that about 26.58% (105) of the respondents had sexual intercourse. From those students who have history of sexual activity, nearly 57.14% (n=60) of respondents had history of pregnancy out which 78.33% (n=47) were unplanned and 61.67% (37) of them gone into induced abortion in which 16.66% (10) of them were unsafe. Knowledge of emergency contraception by students is low and the method is still underused. Strategies to promote use of emergency contraception should be focused on spreading accurate information through medical sources, which have been found to be reliable and associated with creating awareness and good knowledge on emergency contraception.

Keywords: Knowledge, Practice, Attitude, Emergency Contraception (EC), Sex, Female students.

KNOWLEDGE AND ATTITUDE TOWARDS SEXUALLY TRANSMITTED DISEASE AMONG UNDERGRADUATE STUDENTS AT SELECTED PUBLIC AND PRIVATE UNIVERSITIES IN MALAYSIA

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ABSTRACT

Sexually transmitted Diseases (STDs) rank among the most important health issues for the people especially the young adults worldwide. Young people tend to engage in sexual activity more in the past decade as compared to 1970s, and 1980s. Research about young adults' knowledge and attitude towards STDs are crucial to help establish control and education programmes. The aim of the study was to assess the level of STD knowledge and attitude among undergraduate students and thereby determine the differences between the selected demographic variables and STD knowledge. A cross-sectional study was conducted from April 2016 to June 2016 in Selangor and Pulau Pinang, Malaysia. Students were involved in the study by using purposive sampling method. Undergraduate students were approached and asked to complete self-administered and anonymous pre-validated questionnaires online. Google docs were used as an additional recruitment strategy. SPSS was used to analyse the results statistically and results were presented in tabular form. P-value < 0.05 was considered statistically significant. Data was collected from 280 undergraduate students aged between 18 to 28 years. The study indicated that majority of the undergraduate students (97.14%) had low to moderate knowledge level to STDs with mean knowledge score was 16.27±5.55. Accounting for socio-demographics, it was noted that medical students were the variables associated with higher STD knowledge scores. Knowledge level was significantly difference with education background ($p = 0.000$) and sexual experience ($p = 0.000$). Internet (74.6%) was the most frequently media which students seek information about STD. Over half of the respondents (66.4%) lack of empathy toward STD patient. Nearly half of the respondents (48.2%) worry a little or not worry at all if they catch an STD. About one-third of respondents (30.8%) stated that the reason for condom usage was primarily to prevent unwanted pregnancy. Almost all of the respondents (99.6%) showed a positive attitude toward learning more about STDs. This study provided evidence of an inadequate level of knowledge of STDs among undergraduate students. Stigmatization and lack of empathy is still a big problem among university students. Essentially, it is recommended that educational interventions strategies could be implemented to address misconceptions about STD and increase STD knowledge.

Keywords: Knowledge, Attitude, STD, Undergraduate students, Malaysia.

A PRELIMINARY STUDY OF INHIBITORY EFFECT OF HERB *ERIOCAULON CINEREUM* R.Br ON CERVICAL CANCER CELL WITH MTT ASSAY METHOD**ARDE T. NUGRAHA*, VIREN RAMADHAN, HERIANTO PANDAPOTAN, FITRA ROMADHONSYAH**

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ABSTRACT

Eriocaulon cinereum R.Br. is a plant from Bangka Belitung island, known as Rumput Gong. Traditionally infusion of this plant in Bangka Belitung known as source drink recipe for tumor treatment. Previous study reported family of *ericaulon* from China used as an adjuvant for cancer regiment therapy. Other research reported family of *ericaulon* also had cytotoxic effect against A549 cells, MCF-7 and HeLa cells. Ethanol extract from *Eriocaulon cinereum* R.Br was obtained by ultrasonic extraction at 40 degrees up to 30 minutes. Total phenolic, flavonoid content and cervical cancer activity from extract was evaluated by MTT assay method. Total phenolic content is 18,983 mg/g of dry weight extract, expressed as gallic acid equivalents. Total flavonoid concentration is 63,518 mg/g, expressed as quercetin equivalents. Results showed that the ethanol extract from *Eriocaulon cinereum* R.Br potential as an anticancer with IC_{50} 427,79 ppm. This study has revealed anticancer activity of *Eriocaulon cinereum* R.Br from Bangka Belitung Island which potential as further investigation.

Keywords: *Eriocaulon cinereum* R.Br, Ultrasonic extraction, MTT assay, IC_{50} .

EFFECT OF ANTITUBERCULOSIS DRUGS ON SERUM PROTEIN LEVELS IN PEDIATRIC TUBERCULOSIS PATIENTS

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ABSTRACT

Changes on serum protein levels in tuberculosis patients may be related to humoral responses and have been used in monitoring the progression of chronic infections. The aim of this study is to determine the association between antituberculosis drugs and serum protein levels in pediatric tuberculosis patients during the first two weeks of therapy. We performed a prospective observational study with pretest-posttest design in M. Djamil Hospital, Padang, Indonesia from September 2015-April 2016. The diagnosis of tuberculosis based on Indonesian pediatric tuberculosis scoring system. Serum protein levels including total protein, albumin and globulin were performed using spectrophotometric method at baseline and two weeks after the commencement of TB treatment. Among 41 patients, 26 (63.4%) were boys and 15 (36.6%) girls, with mean \pm SD age was 5.89 ± 4.11 years. A total of 19 (46.4%) patients had pulmonary tuberculosis and 22 (53.6%) had extra-pulmonary tuberculosis. The paired samples t-test showed the administration of antituberculosis drugs statistically had no significant difference on levels of serum total protein ($P=0.187$), albumin ($P=0.060$), and globulin ($P=0.957$) between baseline levels compared with two weeks after initiation of TB treatment, even though it showed slightly increased on serum total protein and albumin levels at two weeks of therapy. Administration of antituberculosis drugs did not affect on levels of serum total protein, albumin, and globulin in pediatric tuberculosis patients during the first two week of therapy.

Keywords: Antituberculosis drugs, Pediatric, Total protein, Albumin, Globulin.

THE INFLUENCE OF ANTIPSYCHOTIC TO DECREASE THE SCORE OF THE POSITIVE AND NEGATIVE SYNDROME SCALE-EXCITED COMPONENT**AYUNINGTYAS G. PURWANDITYO^{1*}, YOSI FEBRIANTI¹, CHYNTHIA P. SARI¹, OKKY P. SUGIYARTO², VITARANI D. A. NINGRUM¹**¹Departement of Pharmacy, Faculty of Mathematics and Natural Sciences, Islamic University of Indonesia, Indonesia. ²The Hospital Pharmacy, Psychiatric Hospital of Prof. Dr. Soerojo Magelang, Indonesia. Email: tyasgaluhp@gmail.com**ABSTRACT**

Schizophrenia is a psychiatric disorder with one or more of the following criteria such as delusions, hallucinations, irregular ways of thinking and talking, behavioral disorders and negative symptoms. Antipsychotics are the main therapy for treatment of schizophrenia. There are differences using antipsychotics in acute schizophrenia and resistant. However, in reality there is a mismatch between use antipsychotics which should be given to patient. Therefore, this study is useful to described the type of antipsychotics which decreased the score of the Excited Component of the Positive and Negative Syndrome Scale (PANSS-EC). This study was conducted from January-March 2016 in acute schizophrenia patients in psychiatric hospital using cross-sectional prospective design. Source of data derived from the patient's medical record and observation. We found that there is an effect of antipsychotics in decreasing PANSS-EC scores (73.80%). Based on results of statistical analysis, monotherapy of clozapine significantly gives differences from level of 0.05 compared with antipsychotic monotherapy and combination. Clozapine has significant results compared with other monotherapy and combination of antipsychotic. It showed that clozapine is the most effective antipsychotic in decreasing score of PANSS-EC.

Keywords: Schizophrenia, Antipsychotic, Clozapine, PANSS-EC.

PHARMACISTS KNOWLEDGE ABOUT THEIR ROLES IN TUBERCULOSIS CONTROL PROGRAM IN MEDAN, INDONESIA

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ABSTRACT

Tuberculosis (TB) is a major global public health problem because its increasing prevalence continuously. According to World Health Organization (WHO), Indonesia was ranked as the fourth largest TB incident in the world following India, China and South Africa. All elements of society must be involved for prevention and treatment of TB, especially pharmacists. A cross-sectional study was conducted to observe pharmacists knowledge about their roles in TB control program using a validated questionnaire in Medan, Indonesia. A number of 117 pharmacists were involved in this study. Data which is obtained were descriptively analyzed. Distribution of participants who practice in pharmacy health facility is 78.6% and hospital is 20.5%. Most of the pharmacists (63.2%) had heard about observed treatment short-course (DOTS) directly through seminars and lectures at universities. More than 90% of them realized that they must play their roles as providers, managers of TB drugs, drugs informants, ensure adherence about treatment, educate patients and publics especially when using TB drugs as preventive and treatment. Only 26.5% of the pharmacists who knew that they also could play their role as inventors for early TB which is suspected in the community. This study proved that pharmacists roles must be improved to optimize TB control programs in Indonesia.

Keywords: Pharmacists role, Tuberculosis, DOTs program.

COST CONSEQUENCES ANALYSIS OF ISCHEMIC STROKE AS A CONSIDERATION INA-CBGs NATIONAL HEALTH INSURANCE IN RSUP DR. SARDJITO YOGYAKARTA

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ABSTRACT

Implementation of INA CBGs JKN for ischemic stroke patients required cost consequences analysis. The aims of this research is to know the description therapy and real costs compared with INA CBGs and Length of Stay (LOS) which measured before and after National Health Insurance. This research was observational analytic with cross sectional design. Methods of retrospective data retrieval used medical record document and payment receipts in hospitalization ischemic stroke patients in Dr. Sardjito Yogyakarta between September-December 2013 and January-April 2014. Statistical analysis using one sample t-test compared with suitability of the real costs with INA CBGs. Analysis of independent t-test was used to determine differences in average real costs as well as LOS before and after National Health Insurance. There were discrepancy between real costs and INA CBGs in the stroke ischemic severity I before National Health Insurance and stroke ischemic severity III of National Health Insurance class III, that exceeds the INA CBGs package ($p > 0,05$). Independent t-test results showed there was no significant differences ($p > 0,05$) between the average real cost of ischemic stroke and there was no significant differences LOS in the stroke ischemic patients ($p > 0,05$) between before and after National Health Insurance.

Keywords: Ischemic Stroke, National Health Security (JKN), INA CBGs.

ADHERENCE TO SECONDARY STROKE PREVENTION THERAPIES IN ISCHEMIC STROKE PATIENTS AT HOSPITAL "X"

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ABSTRACT

Stroke is the second leading of death in the world. Patients who survive from the first stroke have risk factor become recurrent. Based on American Heart Association/American Stroke Association and PERDOSSI (Perhimpunan Dokter Syaraf Indonesia), medications which are prescribed to reduce the risk of recurrent stroke as a secondary stroke prevention therapies include antiplatelet /anticoagulant, as well as antihypertensive and lipid lowering agent. Patients adherence to the secondary stroke prevention therapies is paramount to reduce the recurrent stroke. This is a quantitative research and data was collected retrospectively. Numbers of subject in this study were 165 respondents. The participants were interviewed by researcher about their adherence to secondary stroke prevention by Modified Morisky Adherence Scale 8 (MMAS-8) questionnaire. Patients adherence were stated as low (MMAS-8 score < 6); moderate (MMAS-8 score = 6-7) and high (MMAS-8 = 8). From 165 participants, 48 participants (29%) were categorized have low adherence, 43 participants (26%) had moderate adherence, and 74 participants (45%) had high adherence to secondary stroke prevention therapies. The reasons patient not to adhere the medications were because felt better (34%), forgetfulness (19%), boredom (16%), lack of family support (9%), lack of time (7%), felt worse (5%), concern about side effect (4%), preference to complementary alternative medicines (3%), and cost (3%). Thus, the number of patients who has high adherence to secondary stroke prevention was 45% and the reason of participants did not adhere to secondary stroke prevention was because they felt better (34%).

Keywords: Recurrent stroke, Secondary prevention therapy, Adherence.

DIURETIC ACTIVITY OF MATOA (*POMETIA PINNATA*) LEAVES EXTRACTS AND FRACTION AND ITS INFLUENCE ON POTASSIUM AND SODIUM LEVELS

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ABSTRACT

The purpose of this study was to determine diuretic activity of matoa leaves (*Pometia pinnata*) extracts and fraction and its influence on potassium and sodium levels. Matoa leaves were extracted by reflux method followed by evaporation using rotary evaporator. Male wistar rats were divided into 11 groups i.e. furosemide (3.6 mg/kg bw), control group CMC 0.5%, matoa leaves extracts with doses of 50 mg/kg bw; 100 mg/kg bw; 150 mg/kg bw, matoa leaves aqueous fraction with dose of 10.94 mg/kg bw; 21.88 mg/kg bw; 32.82 mg/kg bw, matoa leaves ethyl acetate fraction with dose of 4.35 mg/kg bw; 8.71 mg/kg bw; 13.06 mg/kg bw. Rats were placed in metabolic cages. Urine volume was measured for 5 to 24 hours. Potassium and sodium levels in urine were determined by using Atomic Absorption Spectrophotometry. The effective dose of matoa leaves extract and fractions for diuretic activity was matoa leaves ethyl acetate fraction 8.71 mg/kg bw which could increase the excretion of sodium and potassium in the urine of the male wistar rats. Matoa leaves extract and fractions could increase the excretion of sodium and potassium in the urine of the male wistar rats.

Keywords: Matoa (*Pometia pinnata*), Diuretic, Urine volume, Potassium level.

SIGNIFICANT DRUG INTERACTIONS AMONG INTENSIVE CARE UNIT PATIENTS

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ABSTRACT

Drug interaction is one factor that contributes to drug-related problems. The hospitalized patients in intensive care units (ICU) have a higher risk of developing drug interactions. The purpose of this study was to evaluate the potency of significant drug interactions in ICU patients. Drug Interaction Checker (Medscape) software was used to identify potential drug interactions. This study included 28 ICU patients who had potency to drug interactions based on the software. The patients were 48 years old (in average) consist of 29% male patient and 71% female patient. The number of drugs that were given to patients was 3 to 13 drugs (av. 7 drugs per patient). There were 122 potency of drug interactions found in this study consist of 43.4% potency of minor or non-significant drug interactions, 51.6% potency of significant drug interactions, 3.3% potency of serious drug interactions, and 1.7% potency for contra indicated. Furthermore, the potency of minor or non-significant drug interactions was excluded from data processing. Finally, 69 potential drug interactions were selected for further analysis. Total 66.7% were pharmacodynamics interactions and 33.3% were pharmacokinetics interactions. Dexamethasone, ketoprofen, ketorolac, furosemide, nifedipine, and enoxaparin were the drugs with higher frequency of potential drug interactions. The study showed that potency of significant drug interactions was prevalent in the ICU due to the complexity of the pharmacotherapies administered. The health professionals who provide care to these patients must be aware in order to identify and prevent possible drug events.

Keywords: Significant drug interactions, Intensive care unit, Potency.

UTILIZATION OF SEAWEED PORRIDGE FROM *SARGASSUM SP.* AND *EUCHEUMA COTTONII* AS A COSMETIC FOR SKIN PROTECTOR

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ABSTRACT

UV radiation have negative effects for health of skin. Use sunscreen everyday can absorb 85% sunlight at wavelength of 290-320 nm. The aim of this research is to get the best formulation of seaweed porridge from *Sargassum sp.* and *Eucheuma cottonii* as a sunscreen cream with qualify by analysis antioxidant activity, SPF, physical evaluation of cream and stability analysis. Cream formulation comprised of 5%, 6%, 7% and control. The best percentage of porridge seaweed from *Sargassum sp.* and *Eucheuma cottonii* is cream preparation III. Value of relatively weak antioxidant activity is 18560.02 µg/mL and SPF value classified at least 2.1988. Size of globules in cream increases every week and there were irregular shape of globules. Stability tests showed cream preparation from *Sargassum sp.* and *Eucheuma cottonii* porridge remained stable, there was no phase separation and discoloration. Centrifugall test results predict does not occur after given effect centrifugal force with a speed of 3800 rpm for 5 hours.

Keywords: Seaweed porridge, SPF, *Sargassum sp.*, *Eucheuma cottonii*, Antioxidant activity.

ANALYSIS OF DRUG INTERACTION POTENTIAL AMONG GERIATRIC IN THE INTERNAL MEDICINE INPATIENT WARD AT ONE OF HOSPITAL IN JAMBI

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ABSTRACT

Geriatric is susceptible patients who suffered drug interaction. Geriatric often have more than one diseases thus they always get more complex therapy. Complexity of therapy causes increase of potential drug interaction. Potential drug interactions occurs when drugs is changed or influenced by other drug and given in concurrent administration of drugs. The aim of this study are to describe drug interaction, quantity and severity of drug interaction. This is related with role of pharmacy to prevent serious drug interactions and increase quality life of patients. This research is cross sectional descriptive design. Prospective data collected on February-May 2015. Inclusion criteria was patient at age more than 59 years old who were hospitalized during February-Maret 2015 and received two or more drugs prescription. Each drug was analyzed by using Drug.com Software. Based on identified data 73.97% of 73 patients, there was 69.05% which experiencing pharmacokinetic drug interaction, 28.57% pharmacodynamic drug interaction and 2.38% unknown. The grade severity was minor, moderate and major values of 71.43%, 25% and 3.57% respectively. Use drugs which could make potentially major interaction must consider of needs, risks and benefits of patients.

Keywords: Drug interaction potential, Geriatric, Pharmacokinetic, Pharmacodynamic, Prospective.

DRUG RELATED PROBLEMS (DRPS) ON PATIENTS OF HYPERTENSION IN INTERNAL MEDICINE INPATIENT WARD, CLASS 1 AND 2 AT ONE OF HOSPITAL IN JAMBI

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ABSTRACT

Hypertension is defined as a systolic blood pressure at or above 140 mmHg and a diastolic blood pressure at or above 90 mmHg. Hypertension is a chronic disease that is often called the "silent killer" because it often has no warning signs or symptoms and most patients not realize that they have hypertension before check their blood pressure. People with hypertension sometimes not feel any sign or symptoms until complications occurred. A drug-related problem (DRP) defined as an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes. Drug Related Problems (DRPs) is an event or circumstance which has the potential of drug therapy or can significantly affect the desired therapeutic outcome. The aim of this research is to determine the incidence of Drug Related Problems in hypertensive patients in space medicine, Class I and Class II of Hospital Raden Mattaher Jambi. This research is descriptive study which uses prospective purposive sampling method. There was inappropriate choice of drugs as many 22,2%.

Keywords: Hypertension, Drug Related Problems (DRPs).

WILLINGNESS TO PAY FOR PHARMACISTS COUNSELING SERVICE IN PHARMACY

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ABSTRACT

Concept of pharmaceutical care requires pharmacists for provide pharmaceutical services oriented to patient without exclusion of the product. Counseling is one part of clinical pharmacy services in pharmacy to assess patient's understanding about treatment such as proper use and side effects of drugs, improve patient compliance, motivate patients to take part in their efforts to increase health and cost effectiveness. Counseling services from pharmacists in the pharmacy has not been established, either by the government or pharmacist professional organizations. This study was conducted to determine the patient's willingness to pay (WTP) pharmacist counseling in pharmacy. This research is an observational analytic research through surveys. This study was conducted at pharmacy in Sukoharjo district on January-February 2016, with respondents pharmacy visitors who get counseling by pharmacists. There were 82 patients who participated in this study. Data were obtained from a questionnaire (payment card) which given to patients. Value of WTP determined based on the average of WTP value which chosen by willingness patient to pay. Average value of WTP from pharmacist counseling at pharmacy in Sukoharjo district is Rp.15.892.

Keywords: Willingness to pay, Pharmacist counseling, Payment card, Pharmaceutical care.

DRUG EVALUATION STUDY OF ASPIRIN, CLOPIDOGREL AND CONCOMITANT USE OF ASPIRIN-CLOPIDOGREL IN PATIENTS WITH CARDIOVASCULAR AND CEREBROVASCULAR DISEASES

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ABSTRACT

Cardiovascular and cerebrovascular diseases are an uninfected disease which caused high mortality every year. Cardiovascular disease occurred because of an impaired heart function and blood vessels leading to the heart, such as coronary heart disease, while the cerebrovascular diseases occurred by any disorders that affect the blood flow to the brain, such as stroke. Antiplatelet which are known inhibit platelet aggregation for therapy of cardiovascular and cerebrovascular diseases are aspirin and clopidogrel, most of these drugs are used widely and many researches are conducted to find the side effect of these drugs. The aim of this study was to determine percentage use of aspirin as a single antiplatelet agent, clopidogrel and concomitant use of aspirin-clopidogrel in patients with cardiovascular and cerebrovascular diseases at a public hospital in Surakarta, Indonesia which distribution from basic characteristics of the patients are gender, age, and risk factors. This research is non-experimental research and data collection was conducted using retrospective approach and patient medical records. The inclusion criteria were age, gender, patient diagnosis, co-morbidities, home state status, blood pressure in and out, data platelets in and out of the hospital, use of antiplatelet combination, other drugs, and the patient's risk factors. There were 24 patients who use aspirin as a single antiplatelet agent. They are consisted of 75 % male and 25 % female with ages ≤50 years 25% , 51-59 years 70.8%, 4.2% and ≥60 years factors the risk of hypertension of 62.5 % , smoking 20.8% , 12.5% diabetes mellitus, alcohol 4.2 % ; patients using clopidogrel was 13 patients consisted of 69.2% men and 30.8% of women aged 41-50 years with 38.5%, 53.8% 51-60 years, > 60 years old 7,7% , and patients with the highest risk of risk factors was hypertension (69.2 %) and 30.8% of diabetes mellitus; and antiplatelet combination were 9 patients consisted of 66.7 % men and 33.3 % women, with the highest risk factors was hypertension 42.1%, 26.3% dyslipidemia, and diabetes mellitus 15.8% .

Keywords: Clopidogrel, Aspirin, Antiplatelet, Cardiovascular, Cerebrovascular.

THE INFLUENCE OF PHARMACY COUNSELLING IN THE TREATMENT OF PULMONARY TUBERCULOSIS

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ABSTRACT

The main problems that can lead to failure in pulmonary tuberculosis (TB) treatment are long-term drug use, adverse drug reactions, termination of treatment, and patients' low knowledge about the treatment. Counseling for TB patients is very important because it can increase patients' knowledge about the treatment of TB. This study aimed to determine the influence of pharmacy counseling on patients' knowledge level regarding the therapy of pulmonary TB. This study was an observational cross-sectional study with 65 subjects. The subjects were pulmonary TB patients from TB clinics at Primary Healthcare Centers in Malang, who were chosen based on specific inclusion and exclusion criteria. A questionnaire that has been tested for validity and reliability was used to collect the data. The questionnaire was completed by the subjects pre and post counseling. Collected data were analyzed using Wilcoxon test that can be used for abnormally distributed data. The questionnaire scores showed that there was a change in the patients' knowledge level regarding the treatment of pulmonary TB. The result showed the significant value of 0,000 ($p < 0.05$), suggesting that there were significant differences in knowledge level pre and post counseling. The ranks showed that counseling had a positive influence on patients' level of knowledge. The result suggested that pharmacy counseling had significant influence in patients' level of knowledge in treatment of pulmonary TB. Moreover, increasing patients' knowledge level will hopefully increase patient's compliance in a long period of treatment.

Keywords: Pharmacy counseling, Level of knowledge, Pulmonary tuberculosis.

THE CORRELATION OF HYPERTENSION RISK FACTORS WITH SODIUM AND POTASSIUM LEVELS IN URINE

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ABSTRACT

Sodium (Na) and potassium (K) play important role in homeostatics and regulate the acid-base balance in human body. This research aimed to study the correlation of hypertension risk factors with sodium and potassium level in urine. Volunteers were 99 students (41.41 % male; 58.58 % female) of the Faculty of Pharmacy, Universitas Padjadjaran, Indonesia, aged 18-26 years. Urine samples were collected in the morning and were biochemically-tested using 10 Uric CF (YENACO ®). Determination of sodium and potassium levels was conducted by flame emission spectroscopy (FES). The average urine potassium levels of the students were 117.83 ppm (male) and 89.1 ppm (female). Indian male students showed higher level of urine potassium which was 210.9 ppm. Urine sodium levels were 278.12 ppm (male) and 245.81 ppm (female), whereas those of smoking and alcohol-drinking male students were 284.20 ppm and 185.35 ppm, respectively. It can be concluded that hypertension risk factors does not correlate with sodium and potassium levels in the urine. Correlations were found between sex and ratio of systole/diastole ($r = -0.49$; p -value = 0.000), sex and systole ($r = -0.65$; p -value = 0.000), BMI and systole ($r = 0.38$; p -value = 0.000), BMI and diastole ($r = 0.25$; p -value = 0.012), smoking and systole ($r = 0.23$; p -value = 0.019), exercise and systole ($r = -0.35$; p -value = 0.000), exercise and diastole ($r = -0.22$; p -value = 0.029).

Keywords: Blood pressure, Diastole, Flame emission spectroscopy, Systole.

ANTIFUNGAL POTENCY OF CABAGGE (*BRASSICA OLERACEA* VAR. *CAPITATA ALBA*) EXTRACT AGAINST *CANDIDA ALBICANS* FOR TREATING FLOUR ALBUS

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ABSTRACT

Leukorea or flour albus is excessive fluid that coming out from vagina. Women from all ages, from childhood through menopause, can be affected by flour albus. Flour albus could not be taken lightly, it could be fatal if it treated late. *Candida albicans* is a common fungus that can be found in the infectious flour albus. The disease that caused by *Candida albicans* infection was known as candidiasis. Successful therapy for serious systemic *Candida albicans* infections requires initiation of antifungal therapy as early as possible. Different classes of antifungals were available to manage any type of candidal infection. Azoles, have become the mainstay of therapy over the past few years, but lately *Candida albicans* has been reported resistant to azole group. So, people did some researches to find a new compound to treat candidiasis. Cabbage (*Brassica oleracea* var. *Capitata alba*) was one of the herb that used to treat flour albus in Indonesia. Cabbage extract used as antifungal agent in liquid soap for treating flour albus. The aims of this study is to determine antifungal activity from cabbage extract, minimum inhibitory concentration (MIC), antifungal activity ratio against ketoconazole and cabbage extract concentration which has the fastest contact time to eliminate *Candida albicans*. Fresh cabbages were macerated with ethanol 95% for 3x24 hours, the extract was collected and the solvent was replaced every 24 hours. Cabbage extract was evaporated until became thick cabbage extract. Antifungal activity from cabbage extract against *Candida albicans* and cabbage extract's antifungal activity ratio against ketokonazole were examined using agar diffusion method, while MIC from cabbage extract was determined with solid MIC method. The results were cabbage extracts with concentration 20%, 40%, 60% and 80% gave antifungal activity, the MIC of cabbage extract against *Candida albicans* was between 1.5%-1.75%, cabbage extract's antifungal activity ratio against ketokonazole was 1 : 3926,9158. Cabbage extract with concentration 2.5% gave the fastest contact time (2.5 minutes) to eliminate *Candida albicans*, while Cabbage extract with concentration 0.4% gave the longest contact time (15 minutes) to eliminate *Candida albicans*.

Keywords: *Brassica oleracea* var. *Capitata alba*, Cabbage, *Candida albicans*, Flour albus.

FORMULATION OF SYRUP FROM COFFEE ARABICA (*COFFEA ARABICA* L.) EXTRACT WITH DECAFFEINATION PROCESS

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ABSTRACT

Indonesia is one of the exporter of arabica coffee in the world. Arabica coffee contains chlorogenic acid that have efficacy as an antioxidant and antiviral which can inhibit the influenza virus, HSV-1, HSV-2 and adenovirus. However, arabica coffee also contains caffeine which can cause ulcers. This research aims to formulate syrup of arabica coffee extract with decaffeination process and test the stability of caffeine and chlorogenic acid in syrup of arabica coffee extract. The research began with extraction using ethanol 70% by soxhletation methods, and decaffeination process by liquid-liquid extraction using ethanol and dicloromethan in the ratio 1:1. Formulation syrup of arabica coffee extract was made with various concentrations of Na CMC as thickening agent and Sucralose as flavouring agent. The stability of syrup were evaluated through organoleptic, pH, viscosity, hedonic test, microbiological test and concentration of caffeine and chlorogenic acid were determinated. The results showed that the concentration of caffeine before and after decaffeination process were 3,377 + 0,091 % and 1,028 + 0,079 % whereas chlorogenic acid were 4,159 + 0,163% and 3,019 + 0,138 %. It showed that the best formula contains arabica coffee extract 0,5 %, Na CMC 0,15 % dan Sucralose 0,05 %. Microbiological test showed that there was no contamination in syrup of arabica coffee extract. The concentration of caffeine in syrup of arabica coffee extract was 1,070 + 0,150 % and chlorogenic acid was 4,432 + 1,986 %.

Keywords: Coffee arabica extract, Syrup, Decaffeination, Caffein, Chlorogenic acid.

DOSAGE EVALUATION OF COMPOUNDING MEDICINE FOR TUBERCULOSIS TREATMENT PEDIATRIC PATIENTS IN INDONESIA

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ABSTRACT

The use of antibiotics in compounding medicine in the treatment of pulmonary tuberculosis in pediatric patients is still used until now. However, It causes problems where in the potency tests it could show different result from dosage in the labelled products. This study was aimed to determine the dosage levels of compounding medicine was the same as the dosage levels in labelled products and achieve the requirements were as desired. Samples to be analyzed with convenient sampling method were rifampicin, isoniazid and pyrazinamide and taken from patients were taking medication in the Lung Center in Bandung. The result of validation showed that the analytical method of medication to treat tuberculosis using spectrophotometry UV-Vis was good and it indicated to ensure the quality of the results. The result also specified a significant of the assay for compounding medicine ($p > 0.05$) which means there was no difference in the average weight of compounding medicine in labelled product with the content of the real measurement of compounding medicine. It can be concluded that the compounding medicine contain rifampicin, isoniazid and pyrazinamide was appropriate according standard.

Keywords: Antibiotics, Compounding Medicine, Tuberculosis, dosage, Spectrophotometry UV-Vis.

THE STERILITY OF REUSABLE INSTRUMENTS AT CENTRAL SURGERY INSTALLATION'S ROOM STORAGE OF ONE OF THE HOSPITAL IN BANDUNG

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ABSTRACT

Hospital-acquired Infection (HAIs) is one thing that can increase morbidity and mortality in hospitals. One form of action to control the (HAIs) can be done with sterilization process of medical instruments that used in patient care. Storage of reusable instruments in Central Surgery Installation was an important factor to maintain the instruments sterility assurance. At the hospital where the research was taken place, the sterility test of reusable instruments never been done. This study was conducted to determine the effect of the storage time against the sterility of reusable instruments. Observational and laboratory test were used as methods of this research. The swab method was used to find out the sterility of 30 sets of reusable instruments with time of storage at 1, 4, 8, 12, 16, and 17 days. The result showed that the storage at day of 12, there was one of reusable instruments that was not sterile. The statistical analysis showed that there was positively influence by storage time towards the sterility of reusable instruments that stored in the storage room of the Central Surgical Installation.

Keywords: Hospital-acquired Infection (HAIs), Central Surgery Installation, Reusable Instruments, Sterility Testing.

RESISTANCE TO CIPROFLOXACIN AMONG CLICAL ISOLATES FROM ACUTE RESPIRATORY INFECTIONS (ARIS) PATIENTS AT COMMUNITY HEALTH CENTERS IN TASIKMALAYA, INDONESIA

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ABSTRACT

Acute respiratory infections (ARI) is an acute infection of the respiratory tract that related to structures including middle ear, and paranasal sinuses, and pleural cavity. This study was to determine the resistance and effectiveness of ciprofloxacin to clinical isolates from Acute Respiratory Infections (ARIs) patient at Community Health Centers in Tasikmalaya. The results showed that patient isolates was resistance to antibiotic ciprofloxacin with the percentage of 19.81%.

Keywords: Acute Respiratory Infections (ARIs), Antibiotic resistance, Ciprofloxacin clinical isolates.

ANTIBACTERIA ACTIVITY TEST OF PAPUAN ANT-NEST (*MYRMECODIA PENDANS* L.M. PERRY) STEM TUBER ETHANOL EXTRACT AGAINST *SHIGELLA DYSENTERIAE*

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ABSTRACT

Shigella dysenteriae continues to be a major health problem in Indonesia, which usually leads to death, due to diarrhoea and dysentery, predominantly in children below the age of 5. Bacterial invasion of the colonic epithelium leads to severe inflammation together with bacterial dissemination generates abscesses and ulcerations. *Myrmecodia pendans*, also locally known by indigenous Papuans as ant-nest, which native to Southeast Asia has proven to be rich in bioactive constituents and highly valued as an alternative choice for cancer/tumor treatments and an efficacious herbal drug to prevent and cure diarrhea. This research aims to test antibacteria activity of Ant-nest ethanol extract against *S. dysenteriae* and to know its Minimum Inhibitory Concentration (MIC) – Minimum Bactericidal Concentration (MBC) range of concentration. Ant-nest dried plant were obtained from Wamena, Papua. By using maseration method with 70% ethanol, from 500.42 g dried plant we can obtain 77.47 g dry extract (15.48% rendement). Phytochemical screening results showed that the ethanol extracts of ant-nest contains metabolites such as flavonoids, tanins, saponins, and polyphenols. Antibacteria activity test were performed by using perforated agar method with various extract concentration (10, 20, 40, and 60% (g/mL)). Largest inhibition zone was shown by 60% extract concentration with 1.74 cm diameter. MIC-MBC concentration determinated by using macrodilution method with gradient extract concentration. The result showed that the MIC – MBC of ant-nest extract concentration lays in range of 14 – 16% (g/mL).

Keywords: Ant-nest, *Shigella dysenteriae*, Antibacteria, MIC, MBC.

SCREENING OF ANTICANCER AGENT FROM ETHANOL AND FRACTIONS OF SEA CUCUMBER (*STICHOPUS HORRENS*) USING WST-ASSAY

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ABSTRACT

Cancer is still one of the main health problems in the world. Conventional therapies to treat cancer are still unsatisfied, so that needed an alternative therapy by consuming preparations of natural ingredients. One of the natural materials that have the potential to be developed as cancer drugs is sea cucumber (*Stichopus horrens*). This study was conducted to determine the cytotoxicity of extracts and fractions of sea cucumber against DU 145 prostate cancer cells and HCT-116 colon cancer cells. This study was performed using Water Soluble Tetrazolium Assay. The results showed that the ethanol extract, n-hexane fraction, ethyl acetate fraction and water fraction have cytotoxicity against DU 145 prostate cancer cells, indicated by the IC_{50} value of 219,25 $\mu\text{g/mL}$, 121,73 $\mu\text{g/mL}$, 228,14 $\mu\text{g/mL}$, and 471,96 $\mu\text{g/mL}$, respectively; while against HCT-116 colon cancer cells with IC_{50} values 92.09 $\mu\text{g/mL}$, 45.64 $\mu\text{g/mL}$, 193.91 $\mu\text{g/mL}$, and 291,79 $\mu\text{g/mL}$, respectively. Results of testing on HaCaT normal cells showed that the ethanol extract, n-hexane fraction, ethyl acetate fraction, and water fraction provided a cytotoxicity effect with IC_{50} values 211.51 $\mu\text{g/mL}$, 112.88 $\mu\text{g/mL}$, 418.89 $\mu\text{g/mL}$, and 606.49 $\mu\text{g/mL}$ respectively. From the results of the tests can be concluded that the n-hexane fraction has the highest cytotoxic effect against HCT-116 colon cancer cells.

Keywords: DU 145 prostate cancer cells, HaCaT normal cells, HCT-116 colon cancer cells, Sea cucumber (*Stichopus horrens*), Water Soluble Tetrazolium Assay.

IN VITRO AND IN SILICO EVALUATION OF XANTHINE OXIDASE INHIBITORY ACTIVITY OF QUERCETIN CONTAINED IN EXTRACT OF SONCHUS ARVENSIS LEAVES

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ABSTRACT

The aim of the present study is to examine the inhibiting effects of Quercetin contained in extract of *S. arvensis* leaves on the activity of xanthine oxidase, an essential enzyme for uric acid synthesis. Activity test was conducted *in vitro* by measure the activity of xanthine oxidase using UV spectrophotometry and *in silico* by determine the interaction of Quercetin its aglycone with xanthine oxidase enzyme in terms of hydrogen bonds and binding free energy. Docking simulations were performed by AutoDock 4.2 package. Result showed the active fraction, using the solvent n-hexane, ethyl acetate and water, on each fraction tested the inhibitory activity of the xanthine oxidase enzyme *in vitro* obtained IC₅₀ respectively of 263.19, 16.20 and 141.80 µg/mL. Isolates with highest activity identified as quercetin. The xanthine oxidase enzyme inhibitory activity *in silico* by molecular docking showed quercetin had free energy binding -7.71 kcal/mol, more negative than that of allopurinol -5.63 kcal/mol. This showed that the affinity of quercetin was stronger than allopurinol, so that it can be predicted that quercetin was more potential to inhibit xanthine oxidase enzyme. Thus the ethyl acetate extract of the tempuyung leaves containing the active compound quercetin was a potential use as anti-gout.

Keywords: Inhibitor, Gout, Quercetin, *Sonchus arvensis*, Xanthine oxidase.

ANTI MOSQUITO LOTION COMBINATION FORMULATION OF ESSENTIAL OIL OF BANGLE RHIZOME (*ZINGIBER CASSUMUNAR* ROXB.) AND LEMONGRASS LEAF (*CYMBOPOGON NARDUS* [L.] RENDLE) WITH VANILLIN AS FIXATIVE

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ABSTRACT

Dengue Hemorrhagic Fever (DHF) is acute febrile illness due to dengue virus transmitted by *Aedes aegypti* bites. Some prevention has been executed, including by use of mosquito lotion. Bengle rhizome (*Zingiberis cassumunar* Roxb.) and lemongrass leaves (*Cymbopogon nardus* (L.) Rendle) known as natural materials of mosquito repellent, especially its essential oils, were used in this experiment in lotion fomulation. Vanillin was added in lotion formulation as fixative in order to restrain the protection abillity of essential oils. This studies was execute to determine the mosquito lotion formula from a combination of essential oils from rhizome bengle and lemongrass leaves combined with fixative vanillin. Product evaluations include the organoleptic observations, measurements of pH, and viscosity measurements. The formulas were tested its activity along with the control formula (non vanillin). The results showed that three of the lotion formula still had a good quality of viscosity, pH, and organoleptic. It also performed that the activity of protective lotion formula used respectively as 70.02%; 74.24%; and 77.87% compared with 69.16% of the control. Using Anova as statistical analysis, the results showed that three formulas were performed a different effect on protection ability than control formula.

Keywords: Bangle, Lemongrass, Essential oils, Repellent.

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS INFORMATION LEAFLETS IN COMMUNITY PHARMACIES

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ABSTRACT

Non-steroidal anti-inflammatory drugs (NSAIDs) are one of the most commonly used drugs in the world. They are frequently purchased medicines by patients without the need for a prescription. Increased use of NSAIDs will also increase the number of adverse events related to NSAID use. Useful information on consumer medicine information leaflets are very important to prevent the number of adverse events. This study was to determine the availability and the content of essential medicine information on leaflets for NSAIDs in community pharmacies. Leaflets for all NSAIDs available for purchase from 3 pharmacies in Bandung city, one of largest population city in Indonesia, were evaluated based on criterion checklist and number of leaflets assessed. 28 leaflets from 10 different NSAIDs were collected. 10 leaflets (36%) came from origin manufacturers and 18 leaflets (64%) were provided by local manufacturers. Most of collected leaflets provided less information on adverse events such as 23 leaflets (82%) did not mention the side effects, only 7 leaflets (25%) provided duration of using the medicine, 8 leaflets (28%) provided maximum dose, in case of overdose was 11 leaflets (38%) and in case of missing dose was 3 leaflets (11%). Furthermore, 18 leaflets (57%) only provided for special users such as pregnancy, lactation, children, and elderly. The availability and quality of medicine information from leaflets for NSAIDs in community pharmacies is represented in this study. Essential information on leaflets requires attention and should be improved to prevent adverse drug events.

Keywords: NSAIDs, Drug Information, Leaflets, Community Pharmacies.

MOLECULAR CHARACTERIZATION OF ANTITUMOR EFFECTS OF THE RHIZOME EXTRACT FROM *CURCUMA ZEDOARIA* ON HUMAN ESOPHAGEAL CARCINOMA CELLS

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ABSTRACT

Curcuma zedoaria has been used as a traditional agent against malignant diseases in Asian countries. To elucidate detailed mechanisms producing such an activity, characterization and determination of molecular mechanisms of its antitumor effects was conducted. Inhibiting activities against cell proliferation, invasion and colony formation, and expression levels of corresponding molecules were investigated using human esophageal cancer TE-8 cells treated with the rhizome extract from *C. zedoaria*. Antitumor effect of the extract administered orally was also examined in tumor-bearing mice. The extract possessed strong anti-proliferation and invasion activities against TE-8 cells. Further, upregulated PTEN and downregulated phosphorylated Akt, mTOR and STAT3 expressions in the cells were induced shortly after treatment with the extract, followed by attenuation of FGFR1 and MMP-2, activation of caspase-9, caspase-3 and PARP, and suppression of Bcl-2 expressions, which led the cells to apoptotic cell death. Furthermore, tumor formation in mice was significantly suppressed through the oral administration of the extract. Taken together, these results suggest that the *C. zedoaria* extract could be a promising agent against esophageal cancer.

Keywords: Curcuma zedoaria, Apoptosis, TE-8, Xenograft.

ANTIOXIDANT ACTIVITY OF WATER APPLE (*SYZYGIUM AQUEUM*) FRUIT HIGHER THAN FRAGRANT MANGO (*MANGIFERA ODORATA*) FRUIT

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ABSTRACT

Fruit of water apple (*Syzygium aqueum* (Burm.f.) Alston) and fragrant mango (*Mangifera odorata* Griffith) contains vitamin C, which has antioxidant activity against free radicals. Excessive free radicals cause the degenerative diseases, so it must be suppressed with the exogenous antioxidants. The aim of this study was to compare the antioxidant activity of water apple fruit and fragrant mango against 2,2-diphenyl-1-picrylhydrazyl (DPPH) as a free radical. This research was conducted by visible spectrophotometry. The vitamin C content of water apple and fragrant mango fruit was 0.050% (w / w) and 0.087% (w / w), respectively. The IC₅₀ value of fresh fruit of water apple and fragrant mango was 4713 ppm and 8135 ppm, respectively, which is equivalent to 4.1 ppm vitamin C. Antioxidant activity of water apple fruit was higher than fragrant mango fruit.

Keywords: DPPH, Free radical, Visible spectrophotometry, Vitamin C.

ANTIOXIDANT ACTIVITY OF TAUCHO ETHANOL EXTRACT**RESMI MUSTARICHIE^{1*}, ADE ZUHROTUN², ARINA S. HIDAYAT¹****¹Department of Pharmaceutical Analysis and Medicinal Chemistry, Universitas Padjadjaran, Indonesia. ²Department of Biological Pharmacy, Universitas Padjadjaran, Indonesia. Email: resmi.mustarichie@unpad.ac.id****ABSTRACT**

Taicho is a traditional Indonesian food made from soybeans through fermentation process. Soybeans contains natural group of flavonoids called isoflavones. Fermentation process will increase free isoflavones content in taicho which able to increase antioxidant activity. This study reports the antioxidant activity of taicho ethanol extract and its fractions. Taicho was extracted using soxhletation methods, followed by fractination using liquid-liquid extraction methods. Antioxidant activity was carried out using DPPH with Vitamin C as a comparison. Results showed that IC₅₀ value for the ethanol extract, water, ethyl acetate and n-hexane fractions in a row were 1192.71; 1746.01; 722.38 and 1845.45 ppm. Taicho ethanol extract and fractions shows weaker antioxidant activity than vitamin C, which has the IC₅₀ value of 4.41 ppm.

Keywords: Antioxidant, Flavonoids, Free radicals, DPPH, Taicho, Vitamin C.

VIRTUAL SCREENING AND ENZYMATIC ASSAY OF POTENTIAL NEURAMINIDASE INHIBITORS**RINA F. NUWARDA^{1*}, HABIBAH A. WAHAB², TAN M. LAN³**¹Faculty of Pharmacy, Universitas Padjadjaran, Indonesia. ²School of Pharmaceutical Sciences, Universiti Sains Malaysia, Malaysia.³Advanced Medical and Dental Institute, Universiti Sains Malaysia, Malaysia. Email: rina.nuwarda@unpad.ac.id**ABSTRACT**

Neuraminidase (NA) activity plays an important role in the infection of influenza viruses by facilitating the release of the newly formed virions from the host cell receptor and promotes its infection to other cells or organs. With the emergence of viral resistance towards the existing NA inhibitors, the discovery of new NA inhibitors is urgently needed. In this work, docking-based virtual screening of large compounds from NCI database to rapidly select *in silico* hits to be potential NA inhibitors was carried out. Subsequently, a traditional MUNANA assay was performed to investigate the inhibitory activities and kinetic parameters of the inhibitor compounds. Finally, the selected compounds were studied for their pharmacokinetic properties *in silico*. From the NCI database, 1541 compounds have been successfully screened and 40 *in silico* hits compounds were obtained, and assayed to determine their IC₅₀s. Ten of them demonstrated over 50% inhibition against NA and four compounds namely NSC 5069, NSC 83318, NSC 156563, and NSC 134137 were found having IC₅₀ values of 216 μ M, 320 μ M, 571 μ M and 673 μ M, respectively. The kinetic studies showed Km value for MUNANA was 36.44 μ M and V_{max} for the enzymatic reaction was 551.25 RFU/min. From the Dixon plot, these four compounds appeared to competitively inhibit the neuraminidase with Ki values for NSC 5069, NSC 83318, NSC 156563, and NSC 134137 were 100.26, 204.13, 202.90, and 197.75 μ M, respectively.

Keywords: Molecular docking, MUNANA assay, Neuraminidase inhibitor, Virtual screening.

HIV-1 PROTEASE INHIBITORY ACTIVITY OF ANDROGRAPHOLIDE AND ITS DERIVATIVES

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ABSTRACT

HIV (Human Immunodeficiency Virus) is the virus that causes AIDS (Acquired Immunodeficiency Syndrome), a debilitating and deadly human immune system. Synthetic drugs that are often used for clinical treatment of this disease is antiretroviral HIV-1 protease inhibitors (ARPIs). However, antiretroviral have adverse side effects. The similarity of HIV-1 protease structure with plasmepsin, an aspartic protease enzyme produced by *P. falciparum*, triggered prediction that antimalarial drugs which work by inhibiting this enzyme could be used as anti-HIV. Therefore, it could be predicted that aspartic protease inhibitor can be used as anti-HIV. *In silico* study concluded that three andrographolide derivatives showed inhibition on aspartic proteases. This work was aimed to determine the inhibitory activity and IC₅₀ values of andrographolide, 3,19-2 hydroxylbenzilidene andrographolide, 3,19-3 hydroxylbenzilidene andrographolide, and 3,19-4 hydroxylbenzilidene andrographolide on HIV-1 protease. Method used was by measuring the absorbance using flourometry at excitation/emission (Ex/Em) = 330/450 nm. IC₅₀ of andrographolide, 3,19-2 hydroxylbenzilidene andrographolide, 3,19-3 hydroxylbenzilidene andrographolide, and 3,19-4 hydroxylbenzilidene andrographolide were 23.39, 19.77, 22.34, and 23.28 μ M, respectively. These compounds were predicted to have inhibitory activity on HIV-1 protease.

Keywords: AIDS, Andrographolide, Andrographolide derivatives, Antimalarial, HIV-1 protease.

TASTE MASKING FORMULATION OF WOOD EXTRACT OF *CAESALPINIA SAPPAN* L. USING HIDROXYPROPILMETIL CELLULOZA AS A MATRIX

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ABSTRACT

Secang (*Caesalpinia sappan* L.) has antioxidant properties and used as a health drink. This study has been conducted to make a taste masking formulation from the extract as an antioxidant that qualify as an ODT pharmaceutical preparation. Hydroxypropylmethyl Cellulose (HPMC) as a matrix, using as masking taste of the distinctive taste from extract. This ODT was made in three formulas using the direct compress tablet method with HPMC concentration variation: 3%, 4%, and 5%. In process control of mixing bulk includes loss of drying (LOD), flow rate and angle of rest, real density, incompressible density, and compressibility. In process control of the tablet includes uniformity of size, weight uniformity, friability, disintegration time, and hardness. ODT antioxidant activity assays performed with Diphenylpicrylhydrazyl (DPPH) method. The results showed that ODT formula need the friability improvements in order to be qualified as a pharmaceutical preparation according to Indonesian Pharmacopoeia IV. The antioxidant test results of the three ODT formulas classified in the category of very powerful antioxidant because the IC₅₀ values less than 50 ppm.

Keywords: taste masking, *Caesalpinia sappan* L., antioxidant, ODT, HPMC

ANTIBACTERIAL ACTIVITY OF ETHANOL EXTRACTS OF RED BETTLE LEAF (*PIPER CROCATUM* RUIZ & PAV .) AGAINST *LACTOBACILLUS BIFIDUS*

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ABSTRACT

Flour albus is one of the most dominant issues on female reproduction. Several studies showed anti-flour albus activity of the ethanol extract of red bettle leaf (*Piper crocatum* Ruiz & Pav .) against microorganisms that caused vaginal discharge. But it is important to be considered that the antibacterial effect of the extract can disturb the existence of normal vaginal flora, such as *Lactobacillus bifidus*. The purpose of this study was to determine the antibacterial effect of ethanol extract of bettle leaf against *Lactobacillus bifidus*. Antibacterial activity test was performed using turbidimetry method. The results showed that ethanol extracts had antibacterial activity against *Lactobacillus bifidus* with a limit of the minimum inhibitory concentration of 0.625 % w/v. Thus, the safety level of the ethanol extract of red bettle leaf against the normal vaginal flora could be determined by using a test dose of ≤ 0.625 % w/v .

Keywords: flour albus, *Latobacillus bifidus*, *Piper crocatum*.

ANTIHYPERTENSIVE ACTIVITY OF (*SYZIGIUM POLYANTHUM* (WIGHT) WALP.) LEAF EXTRACT ON SODIUM CHLORIDE INDUCED WHITE RAT

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ABSTRACT

Syzigium polyanthum (Wight) Walp. is a crop that empirically has antihypertensive effect. This research aimed to know the antihypertensive effect of 96% ethanol extract of *Syzigium polyanthum* (Wight) Walp in sodium chloride induced white male rats strain Wistar. Thirty male experience rats were divided into six groups of 5 animals each and were administered orally with PGA suspension 2% (negative control), hydrochlorotiazid (positive control), and four groups of *Syzigium polyanthum* (Wight) Walp ethanol extract. Sodium chloride liquid as inducer was administered orally for 14 days, then continued by giving the *Syzigium polyanthum* (Wight) Walp. extract (375; 250; 125 and 75 mg/BW), hydrochlorotiazid and PGA 2%. The blood pressure (systole, diastole and arterial blood pressure) was measured on the day 1st, 7th, 14th, 21th, 24th and 28th using CODA TM Non-invasive blood pressure. The result showed that *Syzigium polyanthum* (Wight) Walp. leaf extract dose 375 and 250 mg/BW can lower the systole, diastole and average blood pressure on hypertensive rat each 84.21 ; 87,62 ; 84,19% and 78.95; 59.75 ; 61.11%. Ethanol extract of *Syzigium polyanthum* (Wight) Walp. significantly ($\alpha= 0,05$) reduce blood pressure (systole, diastole and average blood pressure) on hypertensive rats.

Keyword: Daun Salam, *Syzigium polyanthum* (Wight) Walp., Hypertension, Non-invasive CODA TM.

A NOVEL DERIVATIVE SPECTROPHOTOMETRY APPLICATION AS RAPID METHOD FOR SIMVASTATIN ASSAY IN CO-CRYSTAL FORM

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ABSTRACT

The increasing of solubility and dissolution of simvastatin as antihypercholesterolemia had been done by co-crystallization method using saccharin and aspartam as co-former. This study was aimed to obtain a valid method of quantitative analysis for the determination simvastatin in the co-crystal form using derivative spectrophotometric. Co-crystal sample with each co-former (aspartame and saccharin) was dissolved using a mixture of the methanol-water ratio (60:40) and then was analyzed at a wavelength measurement level of simvastatin which is third derivative (dA₃/dλ³) at 251 nm. The analytical method was validated based on parameter validation requirements that include linearity, accuracy, precision, limit of detection (LOD) and the limit of quantitation (LOQ). Linearity test showed the value (r) of 0.9998 with concentration range between 0.25 to 2 ppm. The test of accuracy and precision used three variations of concentration was indicated the value of % recovery range between 98.69 to 103.74% and %RSD value ranges between 1.67% - 2.96%. The result of the limit of detection (LOD) and the limit of quantitation (LOQ) showed a value of 0.096 and 0.32 ppm respectively. All validation parameters had indicated fulfill requirements of validation parameters.

Keywords: Simvastatin Cocrystal, Spectroscopy derivative, Co-former.

FORMULATION OF NANOPARTICLE PLGA-POLOXAMER LOADING QUANTUM DOT**PATIHUL HUSNI^{1*}, DIKY MUDHAKIR²**¹Faculty of Pharmacy, Universitas Padjadjaran, Indonesia. ²School of Pharmacy, Institut Teknologi Bandung, Indonesia.
Email: patihulhusni@gmail.com**ABSTRACT**

Malaria, a highly potential disease causing death, is caused by infection of the *plasmodium* genus in red blood cells (RBC). The parasite digests the hemoglobin within a food vacuola of the infected-RBC. Nanoparticle is one of the strategies in delivery of the antimalarial agent into the infected cells. Nanoparticle which has $\leq 0.2 \mu\text{m}$ in particle size can enter the RBC. Beside that, the ability of the nanoparticle to circulate long term in the bloodstream is an important thing to improve interaction between nanoparticle and infected cell. PLGA Polymeric based nanoparticle has been used as an effective carrier for drug delivery into the cell. PLGA nanoparticles are easily recognized by the body immune system and then cleared from the circulation. PLGA nanoparticles has a hydrophobic surface so that it can be recognized by opsonin and eliminated by macrophage (*reticuloendothelial system*/RES). Modification of PLGA nanoparticles surface with hydrophilic polymer such as poloxamer is used to avoid opsonization so that nanoparticles can circulate long term. Fluorescent quantum dot can be used as a long term stable and sensitive sensor. The aim of this study was to develop formula of PLGA-Poloxamer nanoparticle loading quantum dot. PLGA-Poloxamer nanoparticles were prepared by nanoprecipitation method and purified by dialysis. Characterization of nanoparticles are particle size, polydispersity index and potential zeta. The study results showed that the particle size of nanoparticles was between 90-150 nm with polydispersity index of approximately 0,2-0,4 and negative charge of potential zeta. Encapsulation efficiency of quantum dot was more than 90%. Based on the study results, it can be concluded that the PLGA-Poloxamer nanoparticles have the opportunity to enter the infected-RBC.

Keywords: Nanoparticle, PLGA, Poloxamer, Quantum dot, RBC.

SUB-CLONING OF GENES ENCODING *CYTHOCHROME P450 MONOOXYGENASE (CYP71AVI)* INTO EXPRESSION VECTOR IN *ESCHERICHIA COLI*

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ABSTRACT

Artemisinin is an sesquiterpene lactone compound with endoperoxide structure isolated from *Artemisia annua* L. effective as an anti-malarial drug. However, the artemisinin content of *A. annua* L. is very low. One of the potential methods to increase the artemisinin content of *A. annua* L. by genetic engineering to the enzyme involved in the biosynthesis of artemisinic acid as a precursor artemisinin. Cytochrome P450 Monooxygenase (CYP71AVI) is a key enzyme involved in the artemisinin biosynthesis pathway. In this research, sub-cloning gene encoding CYP71AVI into pETDUET1 vector in *Escherichia coli* has been done and then the expression products characterized with SDS-PAGE. Gene construction started with sub-cloning of *cyp71avi* gene from pJexpress401_gene from pJexpress401_cyp into pETDUET1 through restriction site *NdeI* and *XhoI* to get pETDUET1_cyp. Confirmation of the recombinant vector was done by migration, restriction site and sequencing analysis. Overproduction of CYP71AVI was done at temperature 37 °C using 0,5 mM IPTG induction. The protein produced mostly formed as inclusion bodies, therefore the optimization of overproduction condition is still needed.

Keywords: CYP71AVI, pETDUET1, pETDUET1_cyp, *Eshcherichia coli*

EFFECTS OF PHARMACIST COUNSELING ON COMPLIANCE AND INR LEVELS ON OUTPATIENTS RECEIVING WARFARIN AT DR. HASAN SADIKIN BANDUNG HOSPITAL WEST JAVA, INDONESIA

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ABSTRACT

Warfarin is a derivate of coumarin, which is usually prescribed as an oral anti-coagulant for treatment and prevention of thromboembolic disorders. The aim of present research was to analyze the influence of pharmacists' counseling on compliance and INR score recovery on warfarin management. This research was mixed-method design, qualitative data used to complete quantitative data. Qualitative data collected by content analysis with interview. Quantitative data collected by quasi experimental method with control groups, pre test, and post test design. Data was collected by prospective method. Data were analysed using Wilcoxon test and Mann-Whitney test at significance level $p \leq 0,05$ and multivariate analysis covariate. Data were collected from 80 patients with Rheumatic Heart Disease (42,5 %), Atrial Fibrillation (17,5 %), Deep Vein Thrombosis (10%), Rheumatic Mitral Valve Disease (10%), Prosthetic Heart (7,5%), other (22,5%). The numbers of patients whose International Normalized Ratio (INR) was in the therapeutic range for each indication were not statistically different between before and after receiving counseling ($p > 0.05$), Patients' behavior compliance of warfarin therapy had increased after receiving the counseling service ($p < 0.05$).

The result of presents research is pharmacist counseling affected behavior compliance before and after counseling ($p < 0,05$), but not for INR ($p > 0,05$). Pharmacist counseling can improve behavior compliance, but not improve INR target. The Effect of warfarin to every individual not only affected by behavior compliance, but several factors can influenced effect of warfarin is clinical factors, nonclinical factors, and genetic factors. Clinical factors such as age, gender, pharmacokinetic and pharmacodynamic variability in patients. Non clinical factors such as dose, interaction drugs, interactions with food, and intake of Vitamin K.

Keywords: Warfarin, Counseling, Compliance, INR.

THE EXISTENCE OF GENE DNA POLYMERASE MUTATION FROM POSITIVE HEPATITIS B SAMPLES IN BANDUNG INDONESIA

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ABSTRACT

Hepatitis B virus infection was a society health problem worldwide, about 350 million people were hepatitis B carriers. One of the available therapy to control infection and complication was nucleoside analog antiviral chemotherapy, however the major limitation was mutation existence in DNA fragment coding for reverse transcriptase domain viral polymerase caused resistance. For completing mutation existence in reverse transcriptase domain of the viral polymerase the research was done using 12 HBV templates from hepatitis B patient in Bandung. The study was done by amplification step of viral polymerase gene fragment, agarose gel electrophoresis, PCR product purification with GFX column kit, sequencing and sequencing result analysis. The result showed mutations in DNA fragment coding for RT domain viral polymerase in sample 6, 7 and 8. There were mutations leading to amino acid substitution L526S in sample 6, D551E in sample 7 and D552E in sample 8. D551E and D552E substitution occurred in YMDD motif RT DNA polymerase that produced YMDE mutant. L526S, D551E and D552E were estimated as antiviral-resistance mutants that have never been reported before.

Keywords: Hepatitis B virus, Mutation, Gene coding for RT DNA polymerase.

PROTON PUMP INHIBITORS FOR STRESS ULCER BLEEDING PROPHYLAXIS IN CRITICALLY ILL PATIENTS: A COST ANALYSIS STUDY

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ABSTRACT

Stress ulcer prophylaxis is generally administered for the prevention stress-related mucosal disease (SRMD) in critically ill patients. Proton Pump Inhibitors (PPIs) are most commonly prescribed in preventing bleeding from SRMD. Pantoprazole iv and omeprazole iv are the most effective, but clinically effective is not always efficient. This study aimed to investigate whether the most efficient PPIs for prophylaxis in ICU settings. An observational study was conducted on June 2014 with comparative design by using medical records in January 2012–November 2014 in a private hospital in Bandung City. Both retrospective and prospective data collection was performed in this study. Paired t-test analysis was used to compare average cost of the drugs with significant level $p < 0.05$. The results showed average cost of pantoprazole iv 458.142 IDR/patient and omeprazole iv 575.573 IDR/patient, there were significant differences of average drug cost between pantoprazole iv and omeprazole iv ($p = 0.0085$). Both pantoprazole iv and omeprazole iv were effective but pantoprazole iv had been found more efficient.

Keywords: Cost analysis, PPIs, Prophylaxis, Stress ulcer bleeding.

EVALUATION OF CHRONIC DISEASE MANAGEMENT PROGRAM IN INDONESIA: A PATIENT PREFERENCE STUDY

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ABSTRACT

Program Pengelolaan Penyakit Kronis (PROLANIS) is a healthcare system that was conducted by Healthcare and Social Security Agency in Indonesia to improve patients' quality of life. The objective of this study was to analyze level satisfaction of patients, physicians, and private Primary Healthcare Centers (PHCs) with this program, focusing on hypertension care. This study was conducted in 7 private PHCs in Bandung City, Indonesia. A cross sectional study was performed to measure patient satisfaction with PSQ-18 on 143 PROLANIS patients with hypertension. A total number of 8 physicians and 7 private PHC managers were involved in this study. Level satisfaction of physicians and private PHC managers were observed by using in-depth interviews. The results showed that patient satisfaction was estimated to be 68.52 ± 8.54 , which could be interpreted that patient satisfy with PROLANIS. In-depth interviews showed that physicians did not satisfy with PROLANIS due to several factors (e.g., unintegrated prescription systems, lack of medicines, uncompleted laboratory facilities, lack of physicians, unintegrated referral services, and lack of collaboration between primary and secondary healthcare system). On the other hand, private PHC managers were quite satisfied with PROLANIS due to its linearity with other activities in private PHCs. Level satisfaction of patients with PROLANIS is quite good, while physicians might not satisfy with this program. In particular, private PHC managers confirmed that they are satisfied with this program.

Keywords: PROLANIS, Hypertension, Satisfaction level, Patient Preference.

ANTIOXIDANT ACTIVITY FROM TEN SPECIES OF MYRTACEAE

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ABSTRACT

Antioxidants are compounds that can inhibit free radical reactivity. They become very interesting to be observed because they can prevent some diseases like goat arthritis, cancer, cardiovascular disease, Alzheimer's disease, macular degeneration, etc. Since Indonesia is rich for its biodiversity, there are a lot of plants that have potential to be developed as new alternative antioxidants. Because of that, the aim of this research was to evaluate antioxidant activity from ten species of myrtaceae. They were *Syzigium cumini*, *S. samarangense*, *S. aqueum*, *S. aromaticum*, *S. polyantum*, *S. jambos*, *S. malaccense*, *Psidium guajava*, *Eucalyptus deglupta* and *Melaleuca leucadendra*. Continous extraction with Soxhlet apparatus was selected as extraction method. Three solvents (n-hexane, ethyl acetate and methanol) with different polarity were used in this process. DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging activity was used for evaluating antioxidant activity with ascorbic acid as a standard drug. Based on the experiments, methanol extracts showed higher activity than other extracts with their IC₅₀ were below than 25 µg/mL. The lowest IC₅₀ was exhibited by methanol extract of *S. jambos* which was 7.8 µg/mL. It can be concluded that *S. jambos* is potential to be developed as a new alternative antioxidant.

Keywords: Antioxidants, *Eucalyptus*, *Syzigium*, *Melaleuca*, *Psidium*, DPPH.

CYTOTOXIC ACTIVITY OF *GARCINIA MANGOSTANA* L. PERICARP EXTRACT, FRACTION, AND ISOLATES ON *HELA* CERVICAL CANCER CELLS

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ABSTRACT

The mangosteen (*Garcinia mangostana* L.) pericarp can be one of alternative therapy candidates to cure cervical cancer. This study was conducted to see the cytotoxicity of the mangosteen pericarp extract, fraction, and isolate against *HeLa* cells. This research has been conducted on the isolation by gravity column chromatography and TLC. Thus obtained isolates I-A and II-5B isolates thought to be a compound α -mangostin and gartanin. The identification results showed that both isolates had an absorption at a wavelength of ultraviolet, isolates I-A shows the O-H group, C-H aliphatic, C=O, and C-O, whereas isolates II-5B shows the group O-H, C-H aliphatic, C-H, C=C, and C-O. In the mass spectroscopy identification isolates I-A and II-5B has a molecular weight of 410 and 396. The method used to see the cytotoxicity against *HeLa* cervical cancer was WST (Water Soluble Terazolium) assay. Variation of concentration and fraction of mangosteen pericarp extract were used in this research. The result of the study also showed that the isolate I-A has the highest resistor effect against *HeLa* cervical cancer with IC_{50} 6.507 μ g/ml followed by ethyl acetate fraction, ethanol extract, n-hexane fraction, and isolate II-5B with IC_{50} are 7.920 μ g/ml, 18.087 μ g/ml, 44.697 μ g/ml, and 44.1 μ g/ml each.

Keywords: Cervical cancer, Mangosteen, *Garcinia mangostana* L., *HeLa*.

EFFECTS OF NATIONAL HEALTH INSURANCE PROGRAM ON COST MINIMIZATION OF DRUGS FOR CARDIOVASCULAR DISEASES IN ALL PRIMARY HEALTHCARE CENTERS IN BANDUNG

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ABSTRACT

The implementation of National Health Insurance (NHI) in Indonesia has increased the role of Primary Healthcare Center (PHC) on emphasising promotive, preventive, curative and rehabilitative services with affordable cost through the insurance system. Comparing with other degenerative diseases, cardiovascular disease (CVD) has a relatively higher prevalence in Bandung. The aim of this study was to determine the effect of NHI program on cost minimization of drugs for CVD in all PHCs in Bandung. We compared two settings: (i) before the implementation of NHI (2013); and (ii) after the implementation of NHI (2014), by using cost-minimization analysis. In this observational study with a retrospective data collection, we also took into account the use of Defined Daily Dose (DDD) and Drug Utilization (DU) with two thresholds of 75% and 90%. Implementation of NHI has decreased the number of CVD drug consumption (0.49%). Before the implementation of NHI, the cost related to CVD drug utilization (%) would be 72.9% and 90.7% in the segment of DU70% and DU90%, respectively. After the implementation of NHI, the cost would increase up to 87.1% and 94.9% for both segments, respectively. In particular, the cost/DDD after the implementation of NHI also would increase up to 84.9% and 63.55% for both segments, respectively. After the implementation of NHI, cost related to CVD drug utilization in all PHCs in Bandung is higher than before the implementation of NHI.

Keywords: NHI, CVD, DDD, DU, Cost Minimization Analysis.

EFFECTS OF VARIOUS SOLVENT ON THE POLYMORPHIC FORMS PROPERTIES AND ITS SOLUBILITY NATURE OF EFAVIRENZ

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ABSTRACT

The phenomenon of polymorphism can occur in pharmaceutical compounds by a lot of treatments such as supersaturation, agitation rate, cooling rate, solvent composition, temperature, seed crystals, additives and impurities. These polymorphic changes resulted affect to the physicochemical quality of those compounds. Thus, quality evaluation of different crystal forms should be done especially the solubility behavior. In this investigation, different solvent such as acetonitrile, methanol, methanol-water, acetone-water, n-Hexane and n-Heptane were used for the polymorphic recrystallization of efavirenz (EFV). All of polymorphic crystal products were characterized by polarization microscope, differential scanning calorimetry (DSC), powder X-ray diffraction (PXRD), Fourier-Transform Infra-Red (FTIR) and its solubility nature in water. There were significant differences in morphology, crystal structure, thermal behavior and solubility properties among the samples recrystallized using those solvents. EFV succeed to transform into another polymorphic forms by the solvents. Those crystal forms prove as same compound (EFV) by FTIR spectra. The spectra patterns showed that all of samples has same functional groups that it means for identical of compound. So that, the physicochemical properties of polymorphic forms from active pharmaceutical ingredients should be carefully considered in dosage forms pre-formulation approaches.

Keywords: Efavirenz, Structural properties, Solubility nature, Solvent types, Polymorphism.

HOW CAN INDONESIA INTRODUCE DENGUE VACCINE? LESSONS LEARNED FROM OTHER COUNTRIES

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ABSTRACT

Dengue is a rapidly expanding disease affecting many countries, which imposes social and economic burdens on families and national healthcare systems. Vaccine has been confirmed to be one of the most effective intervention to prevent dengue. Yet, the introduction of the dengue vaccine in many countries, including in Indonesia, is currently in its infancy. We conducted a literature search to identify relevant articles in the last ten years (2006-2016) in two major databases: PubMed and ProQuest. Using Indonesia as a reference case, we provided an illustration of the various steps required to accelerate the introduction of dengue vaccine, by focusing on four issues: (i) integration with existing Expanded Programs on Immunization (EPI) and vector control programs; (ii) design of catch-up campaigns; (iii) establishment of effective surveillance systems; and (iv) sustainable financing issues. Factors related to the perceived value of dengue vaccine, health system characteristics, financial barriers and policy considerations might cause the introduction delay in Indonesia. As a middle-income country, it is very important to ensure the sustainability of dengue vaccination in Indonesia so that this new program would be financed over the long term and not endanger the sustainability of the government's financial position.

Keywords: Vaccination, Immunization, Cost-effective, NIP.

ANTI-BACTERIAL ACTIVITY OF *CURCUMA XANTHORIZA* ROXB EXTRACT MOUTHWASH

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ABSTRACT

Dental carries, among others, were caused by the activities of Streptococcus mutants and Lactobacillus acidophilus bacterias. Antiseptic in various forms of mouthwash could be used to prevent these carries. In this study we sought the least formula which contained ginger of Curcuma xanthorrhiza Roxb rhizome extract with Maximum Inhibitory Concentration against 1%w/v Streptococcus mutants. The result showed that 4%(w/v) ginger extract in the mouthwash preparation at 60 seconds contact time given the inhibition zone larger than the standard formula. All mouthwash was made physically stable during the storage period.

Keywords: Dental carries, Mouthwash, Ginger extract, MIC.

CAUSATIVE DRUGS OF DRUG-INDUCED STEVENS-JOHNSON SYNDROME (SJS), TOXIC EPIDERMAL NECROLYSIS (TEN), AND SJS-TEN OVERLAP INCIDENCE AT AN INDONESIAN REFERRAL HOSPITAL DURING 2009-2013

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ABSTRACT

Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are acute life-threatening adverse drug reactions (ADRs) that are commonly caused by medications. Identification and withdrawal of drugs suspected to cause SJS or TEN may decrease mortality. In this study, we aimed to identify the most common causative drugs that suspected to induce these serious ADRs. We conducted a retrospective study to patients diagnosed with drug-induced SJS, SJS-TEN overlap, and TEN from 2009 to 2013 in a referral hospital in West Java Province, Indonesia. Information on the suspected causative drugs were collected and analyzed. The result showed that antibiotics were the most frequently implicated drugs as it present as the suspected causative drugs in 15.67% of the total incidents, followed by analgesic-antipyretics (13.40%), Tuberculosis drugs (9.80%), Anti HIV (6.54%), and NSAID (5.23%). This study showed a warning and the result should be seriously considered, especially in developing countries like Indonesia, where antibiotics are still frequently used.

Keywords: Stevens-Johnson syndrome, Toxic epidermal necrolysis, Adverse drug reactions.

POLYMORPHISM OF APM1 GENE IN CENTRAL OBESITY SUBJECTS RELATED TO INCREASE IN BMI AND LIPID PROFILE

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ABSTRACT

Central obesity is risk factor for metabolic syndrome. Subjects with central obesity have higher risk for developing type 2 diabetes to cardiovascular disease. Many conditions affected central obesity prevalence, including energy expenditure, aging, pro-inflammatory conditions, hormonal, genetic, and ethnic differences. Polymorphism of *Adipose most abundant gene transcript 1* (APM1) gene, encoded protein called adiponectin, closely related to metabolic syndrome. Adiponectin influences fatty acid oxidation and glucose intake in muscle. Therefore variation of APM1 gene associated with diabetes and obesity. Aim of present study was to investigate the correlation between single nucleotide polymorphism (SNP) of APM1 gene rs2241766 with Body Mass Index (BMI) and lipid profile in Indonesian (Bandung) subjects. Genotyping of APM1 gene was done using Amplification Refractory Mutation System (ARMS). Whole blood and serum of 54 central obesity subjects (waist circumference (wc) >90 cm) and 53 healthy subjects (wc <90 cm) were collected. Measurement of lipid profile (LDL, HDL, and Cholesterol Total) and BMI were examined. This study showed that TT and GT genotype were observed (no GG genotype) in all subjects. Central obesity subjects with TT genotype have higher BMI and total cholesterol level than GT genotype. This finding suggest that T allele of APM1 gene rs2241766 were dominant in Indonesia (Bandung) subjects and subjects with TT homozygous genotype have higher incident of metabolic syndrome through increase in BMI and cholesterol level.

Keywords: APM1, Central obesity, Metabolic Syndrome, Indonesia, Single Nucleotide Polymorphism.

AN OBSERVATIONAL STUDY: QUALITY OF LIFE ANALYSIS OF PATIENTS IN CHRONIC USE OF WARFARIN AT CARDIO OUTPATIENT UNIT OF BANDUNG HOSPITAL

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ABSTRACT

Cardiovascular disease is the cause of the highest mortality rates in the world. The number of cardiovascular disease patients is increasing every year. Data obtained from World Health Organization (WHO) that 17.5 million people died from this disease. The condition of cardiovascular disease such as atrial fibrillation, myocardial infarction, venous thromboembolism, and several other conditions need anticoagulant therapy. Results of the anticoagulant therapy are measured not only by the effectiveness of INR value but also by the quality of life of the patients. The purpose of this study was to determine the quality of life of warfarin usage in cardio outpatient unit of Bandung hospital. Data was collected from the quality of life questionnaire (SF-36) and medical record of the patients. The results of this study showed that 28 patients (46.7%) had a good quality of life, 30 patients (50%) had a moderate quality of life, and 2 patients (3.3%) had a poor quality of life with no significant differences of age, gender, diagnosis, and duration of drug use.

Keywords: Cardiovascular disease, Warfarin, Quality of life, SF-36.

NUTMEG SEED EXTRACT (*MYRISTICA FRAGRANS* HOUTT) AS NUTRACEUTICAL FOR ANTIDIABETIC AND ANTIDYSLIPIDEMIC: A POTENTIAL NATURAL DUAL AGONIST PPAR α/γ FROM INDONESIA

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ABSTRACT

Patients with type 2 diabetes generally suffer from hyperglycemia and dyslipidemia which is treated by antidiabetic and antidiyslipidemia, it will be very meaningful if there are drugs that can cope with the conditions of hyperglycemia and dyslipidemia as well. Thus, the development of antidiabetic drugs in the world today, lead to the development of dual agonists PPAR α/γ . Nutmeg (*Myristica fragrans* Houtt.) is known having an antidiabetic and antidiyslipidemic activity with dual agonists PPAR α/γ mechanism. The aim of this study was to observe the antidiabetic and antidiyslipidemic activity of Indonesian nutmeg extract caplets on the type 2 diabetes mellitus mouse model induced by mice feed. The caplets were provided by PT Kimia Farma Tbk. Indonesia. Animals objects were divided into 3 groups: negative control, positive control, and test groups which each group consisted of five mouse model. Fasting blood glucose and triglyserides levels were measured before treatment as H0. Animals object were treated for 6 days with which the negative control group was treated with PGA 2 % suspension, the positive control group was treated with a daily dose suspension of fenofibrate and pioglitazone, while the test group was treated with a suspension of nutmeg seed extract caplets. There was antidiabetic and antidiyslipidemic activity from nutmeg seed extract caplets which can decrease in fasting glucose and triglyserides levels on type 2 diabetes mellitus mouse model. The fasting blood glucose levels of all groups were measured again on the 2nd, 4th and 6th day after the treatment had been given as H1, H2 and H3. It can be concluded that there was an antidiabetic and antidiyslipidemic activity from Indonesian nutmeg extract caplets on diabetes mellitus which is proven by the decrease of fasting glucose and triglyserides levels on type 2 diabetes mellitus mouse model.

Keywords: Nutraceutical, Nutmeg seed extract, Antidiabetic, Antidiyslipidemic, Natural Dual Agonist PPAR α/γ

COMPARISON OF THREE REGIMENS ON DECREASING LEUKOCYTES AND INCIDENCE OF NEUTROPENIA IN PATIENTS WITH NASOPHARYNGEAL CANCER AT RSUP DR HASAN SADIKIN BANDUNG

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ABSTRACT

Nasopharyngeal cancer is the ninth most common cancer in Indonesia. The death of cancer patients is not mainly caused by the cancer itself, but there are also several other factors, such as the side effect on decreasing leukocytes and incidence of neutropenia. Neutropenia is the highest hematological toxicity caused by chemotherapy treatment, where its final manifestation is fatal case from systemic infection. The purpose of this study is to compare three chemotherapy regimens on causing leukocyte reduction and the incidence of neutropenia in patients with nasopharyngeal cancer at RSUP Dr. Hasan Sadikin Bandung. The three compared chemotherapy regimens in this study were cisplatin, cisplatin/5-FU, and carboplatin /paclitaxel. This research is an analytic observational study with retrospective data collection and cross-sectional analytic design. The data were obtained from the medical records of inpatients with nasopharyngeal cancer during January 2015-December 2015. The data from 86 nasopharyngeal carcinoma patients (>18 y.o, female and male) were analyzed in this study. The results showed that there was no significant differences ($p > 0.05$) in the three regimens on the reduction of leukocyte ($p=0.327$) and the average of Absolute Neutrophil Count ($p=0.240$). The percentage of neutropenia incidence were 8.3%, 14.3% and 18.6% in cisplatin, cisplatin /5-FU and carboplatin/paclitaxel, respectively.

Keywords: Nasopharyngeal cancer, leukocyte, neutropenia, cisplatin, cisplatin/5-FU, carboplatin/paclitaxel.

ANTIHYPERTENSIVE ACTIVITIES OF EXTRACT AND FRACTIONS OF MANGROVE HOLLY LEAVES (*ACANTHUS ILICIFOLIUS* LINN.) IN WISTAR RATS WITH NON-INVASIVE BLOOD PRESSURE METHOD

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ABSTRACT

Previous studies had shown that ethanolic extract of mangrove holly leaves (*Acanthus ilicifolius* Linn.) exhibited the diuretic properties. In this study, we conducted an administration in two weeks of ethanolic extract, n-hexane fraction, ethyl acetate fraction, and aqueous fraction of mangrove holly leaves in white male Wistar rats, after two weeks orally administration of sodium chloride 2%, to study the antihypertensive activity of this plant with non-invasive blood pressure method. This study showed that ethanolic extract, n-hexane fraction, ethyl acetate fraction, and aqueous fraction of mangrove holly leaves significantly decreased the systolic and diastolic blood pressure. The best systolic and diastolic blood pressure reduction activity were exhibited by n-hexane fraction (24.04%) and ethanolic extract (32.20%), respectively. Ethanolic extract, n-hexane fraction, and aqueous fraction of mangrove holly leaves showed the antihypertensive activities which were not different than hydrochlorothiazide 1.6 mg/Kg.

Keywords: Antihypertensive, Mangrove Holly Leaves, *Acanthus ilicifolius* Linn., Blood Pressure, Systolic, Diastolic.

IMPLEMENTATION OF THE STANDARD OF PHARMACY PRACTICE ON PRESCRIPTION SERVICES AT PHARMACIES IN YOGYAKARTA

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ABSTRACT

In Indonesia, a new standard of pharmacy practice has been released by Ministry of Health in 2014. In the setting of retail pharmacies, this standard is mainly provided in the prescription services. This research was aimed to assess the implementation of the standard of pharmacy practice as released by Ministry of Health, Republic of Indonesia, at the pharmacies in Yogyakarta. Convenience sampling was used to select the pharmacies resulting in 16 pharmacies with total 50 pharmacists and 308 recipes included in this research. Direct observation on the prescription services and structured interview with the pharmacists was conducted to gather the required data. This research found that the standard of pharmacy practice in the prescription service was implemented by the pharmacist during assessment of the prescription (77.64%), compounding and packaging (64.99%), and delivery of the prescribed medication (82.18%). Some aspects still need to be improved in regard with the collecting of patient's information needed to appropriately assess the prescription, such as medical history and allergy, and provision of drug information (drug side effects, storage, food and drink the should be avoided).

Key words: Pharmacy practice, Prescriptions, Pharmacists.

ANALYSIS OF BPJS KESEHATAN'S OUTPATIENT SATISFACTION WITH PHARMACY SERVICE AT PUSKESMAS "X" IN YOGYAKARTA

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ABSTRACT

In early 2014, Indonesian government launched Program Jaminan Kesehatan Nasional (JKN) to increase the health quality standard of Indonesian citizen. In the JKN system, Puskesmas as the primary health care, has the important role for the member of BPJS Kesehatan. Patient satisfaction is the perception while they get health service in Puskesmas. The more satisfaction of the patient, the more BPJS Kesehatan's member get health service in Puskesmas. This research's aim was to know the BPJS Kesehatan outpatient's satisfaction with the pharmacy service in Puskesmas "X", and to know if socio-demographic factors affect the patient satisfaction. This was a descriptive-analytic research, which used cross-sectional design. The sample was taken from January 2nd to 29th 2016. One hundred sample patients were taken with the accidental sampling method. Quantitative data was collected with SERVQUAL questionnaire, which contain five dimensions (reliability, responsiveness, tangible, assurance, and empathy). The data was analyzed with chi-square and spearman rank correlation. The result of the research reveal that the highest reliability percentage satisfaction was 83.15% and the lowest tangible percentage satisfaction was 75.17%. The finding also showed that there was correlation between visiting frequency and the level of BPJS Kesehatan's outpatient satisfaction with the pharmacy service in Puskesmas "X".

Keywords: Puskesmas, BPJS Kesehatan, Outpatient, Satisfaction, Servqual.

COST ANALYSIS OF CHRONIC KIDNEY DISEASE JKN INPATIENTS AT THE PROVINCIAL GENERAL HOSPITAL (RSUP) DR. SOERADJI TIRTONEGORO KLATEN

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ABSTRACT

Chronic kidney disease is a disease whose high morbidity, mortality and total of patients increase every year in Indonesia. The prevalence of chronic kidney disease in Indonesia is 0.2%, in addition Central Java has prevalence of chronic kidney disease 0.3%. The research obtained for the direct medical costs with hospital perspective, and the differentiation between real costs and INA CBG's of chronic kidney disease in RSUP dr. Soeradji Tirtonegoro Klaten. The research design was cross-sectional with descriptive observational method and used retrospective data. Subjects were JKN patients with chronic kidney disease code N-4-10-I, N-4-10-II and N-4-10-III, and hospitalized in RSUP Dr. Soeradji Tirtonegoro Klaten period January 2014-March 2015. The subjects that complete inclusion criteria were 72 patients. The data was analyzed by descriptive statistic such as description of direct medical cost and the differences between real costs and INA CBG's. The average direct medical costs of chronic kidney disease in severity I (N-4-10-I) class I was Rp.4.374.000,00, class II was Rp.3.337.386,00±Rp.2.580.268,00, and class III was Rp.2.468.811,00±Rp.1.754.347,00. The average direct medical costs in severity II (N-4-10-II) class I was Rp.10.507.778,00, class II was Rp.4.207.044,00, and class III was Rp.4.124.892,00±Rp.4.194.152,00. The average direct medical costs in severity III (N-4-10-III) class I was Rp.9.318.324,00, and class III was Rp.9.265.302,00±Rp.9.861.752,00. Total real cost of chronic kidney disease in RSUP Dr. Soeradji Tirtonegoro Klaten had positive differences Rp.14.877.018,00 with INA-CBGs.

Keywords: Chronic Kidney Disease, Direct Medical Costs, INA-CBGs (Indonesia Case Base Groups).

IMPROVING TYPE 2 DIABETES MELITUS PATIENTS'S PHARMACEUTICAL CARE BY ASSESSING THE QUALITY OF LIFE AND PATIENTS' PERCEPTION

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ABSTRACT

The prevalence of T2DM patients in Indonesia is high and it is predicted to reach 21 million in 2030. One of the treatment outcomes for T2DM patients is to improve quality of life (QoL). This study was aimed to evaluate T2DM patients' QoL both in with and without complication and to understand the association between patients' perception and QoL. We conducted cross sectional study in Private Hospital of Yogyakarta. We recruited adult patients with diagnose of T2DM and T2DM along with the complication. Subjects were recruited if they were diagnosed as T2DM at least 3 months before the study. We excluded pregnancy and lactation patients. Student-T test analysis was performed to understand the domains differences between T2DM patients with and without complication. Regression Linier test was performed to understand association between patients' perception and QoL. DQLCTQ and BIPQ were used to measure patients' QoL and patients, respectively. We recruited 139 T2DM patients without and with complication. Female patients are dominant in both of group. Most of subjects in both groups experienced T2DM more than 5 years. The significant differences of results are shown in the domains of; health problem, self-satisfaction, energy, treatment effect, frequency of symptoms and treatment satisfaction ($p < 0.05$). The highest score of perception is shown in consequence domain (mean: 6.27). The significant associations are presented between positive perception and all domains of QoL, except for treatment satisfaction ($p < 0.01$). Our study found that complication in T2DM may deteriorate patients' QoL. Thus, pharmacists should increase their pharmaceutical care to prevent complication in T2DM patients. The good education and information may improve patients' perception to disease and medication. This service may indirectly improve patients' QoL.

Keywords: Perception, QoL, T2DM, Indonesia, DQLCTQ, BIPQ.

HAIR GROWTH POTENSIAL OF MANGKOKAN (*NOTHOPANAX SCUTELLARIUM MERR*) LEAF EXTRACT ON MALE WHITE RABBIT

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ABSTRACT

Mangkokan leaves are known to have activity nourish hair. This mangkokan leaves contains flavonoid compounds that presumably contained therein apigenin which served to accelerate hair growth with a mechanism widens the blood vessels. This study was conducted to determine the best concentration of ekstrak mangkokan to grow hair. The extract obtained by maceration using 96% ethanol. The test preparation was made by dissolving the concentrated extract obtained into 100 mL of ethanol. For a concentration of 2.5%, 5% and 7.5% was made with 2.5 grams, 5 grams and 7.5 grams of concentrated extract is diluted with 100 mL. Tests conducted for 28 days with the treatment of morning and afternoon. Activity test was conducted by Tanaka et al. The results showed that the most excellent hair growth obtained at concentrations of 7.5%, softest hair texture found in rabbits treated with a concentration of 2.5%. At a concentration of 7.5% activity hair growth is almost the same result with the growth of rabbit hair treated with minoxidil 5%, hair growth stocks in the market.

Keywords: Leaves mangkokan, Concentrated extract, Hair growth.

A STUDY OF DRUG RELATED PROBLEM (DRP) IN ELDERLY PATIENT ON ROUTINE HEMODIALYSIS

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ABSTRACT

The growth of the elderly population is increasing globally. This study aims to find out the level of Drug Related Problems (DRP) incidents in elderly patients with routine hemodialysis. This cross sectional was conducted on elderly patient having routine hemodialysis at RSUP. Dr. Wahidin Sudirohusodo from April 01 to June 30, 2015. The DRP analysis was conducted by taking notes of the patients' treatment profile. The data were analysed theoretically based on the literature study and interviews with the patients. Assessment of medical obedience and unexpected side effects was conducted using Modified Morisky Scale and Naranjo Scale questionnaires. There were 32 subjects with several characteristics: age of 60-74 years old (30 patients) and >74 years old (2 patients); male (17 patients) and female (15 patients); duration hemodialysis <8 months (13 patients) and ≥8 months (19 patients); comorbidity DM (18 patient) and non DM (14 patient). There were 40 DRP cases found in this study including 20 cases (50%) of drug interactions, 5 cases (12.5%) Adverse Drug Reaction (ADR), 4 cases (10%) subtherapeutic dose, 3 cases (7.5%) of failure to receive drugs, 3 cases (7.5%) of overdose, 2 cases (5%) of improper drug selection, 2 cases (5%) of drug use without indication, and 1 case (2.5%) of indication without therapy.

Keywords: DRPs, Elderly, Hemodialysis, RSUP. Dr. Wahidin Sudirohusodo Makassar.

THE STUDY OF MULTIDRUG-RESISTANT IN NEONATAL AND PEDIATRIC INTENSIVE CARE UNIT IN CENTRAL JAVA HOSPITAL

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ABSTRACT

Multidrug-resistant (MDR) is defined as acquired non-susceptibility to at least one agent in three or more antimicrobial categories. MDR can be caused by several things, including the use improper antibiotics. Antibiotic resistance is still a global problem, including Indonesia. This study aims to identify patterns of MDR organism (MDRO) in Neonatal and Pediatric Intensive Care Unit (PICU and NICU) in Central Java Hospital during the period January 2014 to December 2015. The study was conducted using descriptive retrospective design. Forty six patients in NICU and thirty six patients in PICU were included for this study. All the subject were performed cultur and sensitivity tests by microbiologist specialist doctor. Results show that 98-100% specimens from NICU and PICU patents exhibited MDRO. The bacterias that infect patients in NICU are *Pseudomonas sp*, *Klebsiella sp*, *Serratia sp*, *Enterobacter sp*, *Acinetobacter sp* and *Edwardsiella sp* whereas in PICU patients are *Pseudomonas sp*, *Klebsiella sp*, *Serratia sp*, *Enterobacter sp*, *Acinetobacter sp*, *Enterococcus sp*, *E.coli* and *Moraxella sp*. The type of bacterial infection are sepsis (82.6% in NICU patients and 63.9% in PICU patients). Antibiotics which still potent for almost all bacteria in NICU patients are meropenem and ciprofloxacin whereas meropenem in PICU patients. More than 50% of patients in NICU stayed in the hospital were less than 7 days while in PICU they stayed more than 7 days. The death rate of patients in NICU was higher than in PICU. Severity and antibiotic doses might be involved in the outcome therapy of the patients.

Keywords: Multidrug-resistant, Neonatal, Pediatric.

AN INFLUENCE OF MODIFIED COUNSELING METHOD AGAINST THE EFFECTIVENESS OF PHARMACOTHERAPY OF HYPERLIPIDEMIC PATIENTS IN SOME PHARMACIES, BANDUNG CITY OF INDONESIA

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ABSTRACT

Counseling is a process of systematic two-way communication between pharmacists and patients to identify and solve problems. Counseling is very important, especially for patients with specific chronic diseases such as cardiovascular disease (CVD). The main risk factor in CVD is uncontrolled hyperlipidemia. Hyperlipidemic patients must undergo treatment in a long time and require high compliance to take medicines and good lifestyle changes in order to achieve better therapeutic results. To achieve all, appropriate counseling methods which are in accordance with the standards are needed. Therefore, this study was aimed to determine the effect of a counseling method with modification against the effectiveness of pharmacotherapy of hyperlipidemic patients. This research was done using a quasi-experimental approach with counseling intervention against hyperlipidemic patients undergoing pharmacotherapy with statin in some pharmacies in Bandung city, Indonesia. The patients were divided into a control group that was given verbal counseling alone and an experimental group that received modified counseling. The modified counseling was verbal counseling accompanied by administration of leaflets and video as well as monitoring on the use of medicines conducted through phone. The numbers of samples used in this study were 72 patients consisting of 36 patients as the control group and 36 patients as the experimental group. The dependent variables observed were perception of the patients on hyperlipidemia disease, behavior of the patients on therapy, and lipid profile examined in the laboratory. The results showed that perception, behavior, and lipid profile of the patients in the experimental group experienced a greater improvement as compared with those in the control group. This means that the modified counseling method was more effective than the usual counseling method in supporting hyperlipidemic therapy.

Keywords: Counseling, Hyperlipidemia, Pharmacy, Statin.

ANTIBACTERIAL ACTIVITIES OF ETHANOL EXTRACT AND ITS FRACTIONS FROM MALACCA FRUIT (*PHYLLANTHUS EMBLICA* L.) AGAINST *BACILLUS CEREUS* FNCC0057 AND *SHIGELLA DYSENTERIAE* ATCC13313

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ABSTRACT

Diarrhea is a symptom of the disease characterized by increased frequency of defecation more than three times a day, with a more fluid of feces, which sometimes caused by a bacterial infection. In Ayurvedic medicine, the fruit of Malacca (*Phyllanthus emblica* L.) is often used as an antibacterial and antiviral against various infectious diseases. This study aimed to determine the antibacterial activities of ethanol extract and its fraction of Malacca fruit and determine Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) was against diarrhea-causing bacteria, such as *Bacillus cereus* FNCC0057 and *Shigella dysenteriae* ATCC13313. The study was conducted through the determination of the plant, preparation and extraction of simpisia, fractionated extract, antibacterial activity test of ethanol extract and its fractions, determination MIC and MBC from the most active fractions and phytochemical screening of this fraction. The results showed that ethanol extract and its fractions of Malacca fruit has antibacterial activities against *B. cereus* FNCC0057 and *S. dysenteriae* ATCC13313, where the greatest activity was shown by the fraction of ethyl acetate. This fraction has MIC 0.187 to 0.375% (w/v) and MBC 0.375% (w/v) against *B. cereus* FNCC0057, while MIC 0.09375 to 0.1875% (w/v) and MBC 0.1875% (w/v) against *S. dysenteriae* ATCC13313. The antibacterial activity of this fraction probably derived from alkaloids, tannins, flavonoids, monoterpenes or sesquiterpenes compounds.

Keywords: Antibacterial activity, Malacca fruit, *Phyllanthus emblica* L, *Bacillus cereus* FNCC0057, *Shigella dysenteriae* ATCC13313.

ADRENAL SUPPRESSION OF INDUCTION PHASE CHEMOTHERAPY IN PATIENT WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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ABSTRACT

Glucocorticoids play an important role in the treatment of acute lymphoblastic leukaemia (ALL). However, supraphysiological doses may cause suppression of the adrenal. Adrenal suppression resulting in reduced cortisol response may cause an inadequate host defence against infections, which remains a cause of morbidity and mortality in children with ALL. The occurrence of adrenal suppression before and after glucocorticoid therapy for childhood ALL is unclear. The aim of this study was to analysis the effect of glucocorticoid on cortisol levels during chemotherapy induction phase in children with ALL. A cross-sectional, observational prospective study was conducted to determine the effect of glucocorticoid on cortisol levels in children with ALL. Patients who met inclusion criteria were given glucocorticoid therapy for 49 days according to the 2013 Indonesian Chemotherapy ALL Protocol. There were 24 children who suffered from ALL. In standard risk group, the adrenal suppression occurs at around day 56. There was a significant decrement of cortisol levels in high risk group in day 14, 28, 42 against day 0 of induction phase ($p=0,001$). Both groups displayed different peak cortisol levels after 6 week of induction phase ($p=0,028$). Effect of dexamethasone on adrenal suppression was faster than prednisone during the induction phase of chemotherapy. This is due to differences in parameters of pharmacodynamics and pharmacokinetics of both. The incidence of adrenal suppression provides an opportunity high incidence of febrile neutropenia in patients receiving glucocorticoids that would be associated with an increased incidence of infection.

Keywords: Glucocorticoid, Cortisol levels, Adrenal suppression, Prednisone, Dexamethasone, Children.

GIVING ANTIBIOTICS STUDY IN ORDER ENHANCING THE SUCCESS OF THERAPY IN PATIENTS WITH SEPSIS

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ABSTRACT

Sepsis is a disease that causes many cases of death in a patient around 9.3% of all cases of sepsis patients which lead to death of 250,000 patients in the United States. De-escalation of antibiotic is expected to increase the effectiveness of therapy, decrease in the level of antibiotic resistance and highly reduce mortality rate in sepsis patients. The purpose of this study was to describe the frequency and characteristics of antibiotics de-escalation in patients with sepsis and its effect on patients. The study was conducted retrospectively and purposive sampling in hospitalized patients in Yogyakarta with age > 15 years from January to December 2015. The result showed that 46 patients underwent de-escalation and 116 patients did not have antibiotics de-escalation, in which most of the cases was the absence of changes in the types of antibiotics that were given from the beginning of therapy until treatment was completed. Most of the treated sepsis patients are around 46-60 years (36.4%), the highest length of hospital stay was 6-10 days (27.2%), majority amount of antibiotics received by the patients was 1-2 types of antibiotics (46.9%), the origin of sepsis patients before taken in as inpatient mostly came from the emergency department around 103 patients (63.6%), clinical outcomes of patients who recovered were 75 patients (46.3%), co-morbidities that frequently appear in sepsis patients was pneumonia around 60 cases (16.6%). Patients who were culture examined were 47 patients (29%). The most sensitive antibiotic that can be given to patients with sepsis is the cephalosporin group antibiotic.

Keywords: Sepsis, Antibiotics, Antibiotic De-escalation, Culture.

MITOGEN ACTIVATED PROTEIN KINASE-INDEPENDENT PATHWAY OF ANTIPROLIFERATIVE ACTIVITY OF *ANNONA MURICATA* LEAVES EXTRACT IN JURKAT T CELLS

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Abstract

The prevalence of cancer is high in all over the world, including Indonesia. Investigations of new anticancer from natural product are still become interest considering side effect of synthetic anticancer drugs. *Annona muricata* (*A. muricata*) is native Indonesian plant that has been used empirically for decades as anticancer, antidiabetes, and immunomodulator. In present study we investigated the antiproliferative activity of *A. muricata* leaves extract and fraction in Jurkat cells, an acute Leukimia T cell line. The leaves of *A. muricata* were extracted using ethanol and fractionated using ethyl acetate, *n*-hexane, or water. The proliferation assay was done using CellTiter-Glo based on ATP calculation of viable cells. The underlined mechanism was examined by western blot analysis of Mitogen Activated Protein Kinases (MAPKs), which is JNK, ERK, and p38 protein. The result observed that ethanol extract and ethyl acetate fraction of *A. muricata* inhibit proliferation of Jurkat cells. The antiproliferative activity of *A. muricata* did not stimulate expression of JNK, ERK or p38 protein. This study showed that antiproliferative activity of *A. muricata* leaves was MAPKs-independent. Further elucidation is needed to confirm the antiproliferative activity of *A. muricata* leaves and its underlined mechanism.

Keywords: Anticancer, MAPKs, JNK, ERK, p38 protein.

PERCEPTION STUDY OF STUDENTS FROM THE HEALTH FACULTIES AT UNIVERSITAS PADJADJARAN ON THE USE OF “KEROKAN” AS ONE OF LOCAL WISDOMS IN INDONESIA

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ABSTRACT

“Kerokan” is one of traditional treatment methods in Indonesia that can be categorized as a local wisdom. Despite the fact that “kerokan” has been used widely for several purposes (e.g., nausea and fatigue), it has been known its several side effects, such as breaking the blood vessels and causing continuous pain. However, the result from a study conducted in 2012 has broken the myth that “kerokan” might cause rupture of blood vessels. Therefore, it is necessary to conduct a study on measuring people perceptions related to “kerokan”, and its relationship with the variables of Health Belief Model (HBM), such as gains, obstacles, and ability to act. An online survey was conducted in this study by using students from the faculty of health, Universitas Padjadjaran, as the research subject. The result was analyzed by using Pearson. It showed that the perception level of respondents on “kerokan” was good. The perceived level associated with variables of gain and ability to act was significant. In particular, the perceived level associated with barrier variable was significant, yet inverse.

Keywords: Online Survey, Perception, Questionnaire, Health Belief Model.

PLATELET AGGREGATION PROFILE AND CARDIOVASCULAR EVENT IN CORONARY HEART DISEASE PATIENTS WITH DUAL ANTIPLATELET

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ABSTRACT

Platelet aggregation plays an important role in atherosclerosis process in Coronary Heart Disease (CHD) patients. Antiplatelet acts to prevent platelet aggregation and thrombus subsequently. Thrombus will block artery coronaries. Antiplatelet responsiveness can be seen by aggregation platelet profile. Based on the background, the aim of this research was to review platelet aggregation and cardiovascular event profile in CHD patients with dual antiplatelet. Prospective study was used in this study. CHD patients with dual antiplatelet therapy, willing to follow this research, and compliance with therapy were recruited into this study. Blood samples from patients were collected for platelet aggregation test. Platelet aggregation was analyzed by Light Aggregometry which used three platelet inducer (ADP, Collagen, Epinephrine). Cardiovascular event was defined by ischemic attack that CHD patients got in 3 months. 12 patients were recruited for this research. From the 12 patients, 5 patients occurred ischemic attack within follow up. Platelet aggregation for that 5 patients which had ischemic attack, was normal and under normal platelet aggregation. Platelet activation is contributor subsequent atherothrombosis in patients with high inflammatory regulations in artery wall and systemic circulation. Platelet aggregation profile can be reflected as antiplatelet activity. Statistical analysis was done for aggregation profile and cardiovascular event. P-values > 0.05 which means there's no correlation between platelet aggregation and cardiovascular event. Platelet aggregation in this research showed in normal and under normal function. Antiplatelet concentration should be measured for filling the gap between aggregation profile and cardiovascular event.

Keyword: Platelet aggregation, Antiplatelet, Cardiovascular event.

HYPERLIPIDEMIA KNOWLEDGE: A SINGLE CENTRE CROSS SECTIONAL SURVEY AMONG UNIVERSITY STUDENTS AND STAFF MEMBERS

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ABSTRACT

Education and awareness promotion were recommended by several guidelines as a primary prevention for Hyperlipidaemia. This study aimed to evaluate the level of knowledge regarding hyperlipidaemia of student and staff of Universiti Sains Malaysia (USM). A cross-sectional survey was undertaken at Universiti Sains Malaysia, Penang. The validated questionnaire was divided into four sections. The section one included question regarding causes of hyperlipidaemia, section two included question regarding food with high cholesterol level, section three included question regarding complication of hyperlipidaemia and the final section included question regarding cholesterol lowering medication. SPSS version 20 was used for statistical analysis. Majority of the respondents were Malay (82.4%) and aged below 29 years old (74.6%). The mean score was 3.6 (SD 1.08) points, 6.3 (SD 1.06) points and 2.03 (SD 1.01) respectively with maximum score of "6", "7" and "4" for section one, two and three respectively. The fourth section showed that less than 20% of the respondent knows regarding the medication. Significant association was observed for the knowledge scores of section one with gender ($p=0.006$) and respondents age below 29 years ($p=0.007$). Similarly, significant association was observed in the second section scores with smoking status ($p=0.003$) and ethnicity ($p=0.003$) and the third section scores with gender ($p=0.02$). Several respondent factors such as gender, ethnicity and smoking status were identified that affect the knowledge level of hyperlipidaemia. Regular educational seminars and public awareness *campaign* can bring positive changes in knowledge of hyperlipidaemia.

Keywords: Hyperlipidaemia, Knowledge, Awareness.

**STUDY OF DRUG RELATED PROBLEMS (DRPS) IN PATIENTS WITH HEMORRHAGE STROKE
IN GENERAL HOSPITAL CENTER MAKASSAR DR. WAHIDIN SUDIROHUSODO (SUPERVISED
BY ELLY WAHYUDIN AND H. AMIRUDDIN ALIAH)**

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ABSTRACT

Stroke still remain a serious concern in worldwide, because it is the third cause of deaths after cancer and cardiovascular disease. This study aimed to determine Drugs Related Problems (DRPs), which are unwanted drug reactions, problems of drug selection, dosage problems, problems of drug use, drug interactions in patients with Hemorrhagic Stroke in General Hospital Center DR. Wahidin Sudirohusodo Makassar. The study was conducted prospectively from January to March 2016. Pharmaceutical Care Network Europe (PCNE) 5:01 version was used as DRPs standard-setting in patients. There were 31 patients as the study subject. There were five categories of DRPs events found, DRPs category of the most common is the problem of selection of drugs (53.8%), problems ROTD (7.7%), drug use (15.4%), the problem of interaction (6.5%), the problem of the dose (7.7%). Association between category and cause of DRPs in patients was obtained from the calculation using SPSS 23 statistical correlation. We found that between 5 DRPs incidents, only one incident has correlation with informations and logistics with $p\text{-value}<0.05$ ($p=0.00$). Correlation between category of DRPs and cause of informations and logistics with category of drug interactions and selection of drugs or doses have $p\text{-value}<0.05$ ($p=0.00$). These data indicate that there is a prevalence of DRPs in patients with hemorrhagic stroke.

Keywords : Haemorrhage stroke, DRPs, PCNE v5.01.

DRUG RELATED PROBLEMS IN PATIENTS WITH ISCHEMIC STROKE IN GENERAL HOSPITAL CENTER DR. WAHIDIN SUDIROHUSODO MAKASSAR

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ABSTRACT

This study aim to identify the types of Drug-Related Problems (DRPs) and provide the study on the incidence of DRPs that occur in patients with ischemic stroke. The study was an observational study with prospective and descriptive analyzing data. The tools of this study were Guideline Stroke PERDOSSI 2011, AHA/ASA Primary Prevention of Ischemic Strok 2006, and PCNE Classification V 5.01, and Stockley's Drug Interaction. We recruited 35 patients in the hospital. There were a total of 50 DRPs were found, the most frequent DRP categories encountered were interactions (88%) which is "potential interactions", dosing problems (6%) which is "duration of treatment too short", drug of choice problems (4%) which is "no drug prescribed but clear indications", and drug use problems (2%) which is "drug not taken/administered all". The causes were drug/dose selection (89,7%), information (2,6%), and others (7,7%). Dosing problems over drug/dose selections, information, and other causes have shown significantly correlation with $p=0,00$ ($p<0.05$). Drug use problems over logistics showed significant correlation with $p=0,00$ ($p<0.05$). Interaction problems over drug/dose selections showed significantly correlation with $p=0,00$ ($p<0.05$). These data indicated that there were prevalence of DRPs in ischemic stroke patients.

Keywords: Ischemic stroke, DRPs, PCNE v5.01.

ACTINODAPHNINE DERIVED FROM INDONESIAN HERBAL PLANTS, *CUSCUTA AUSTRALIS* AND *LITSEA GLUTINOSA*, IS A POTENTIAL CANDIDATE OF DIPEPTIDYL PEPTIDASE 4 INHIBITOR FOR BREAST CANCER THERAPY

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ABSTRACT

The prevalence of breast cancer in Indonesia is 48.988 cases in 2012 with 1.14% mortality rate. Dipeptidyl Peptidase 4 (DPP4) protein has contributed in pathogenesis of some cancers. In silico study indicated that actinodaphnine has similar properties to sitagliptin (DPP4 inhibitor). However, the inhibitory effect of actinodaphnine in cancer cells has not been established. Therefore, this research study aimed to investigate the cytotoxic effect of actinodaphnine from Indonesian herbal plants on breast cancer cell line (MCF-7). Some Indonesian phytochemicals were screened using molecular docking with sitagliptin as a standard ligand. *AutoDockVina* 1.1.2, *PyMol* 1.7 and *Chimera* 1.9 softwares were used to analyze phytochemicals-DPP4 binding complexes. Actinodaphnine in *Cuscuta australis* and *Litsea glutinosa* was extracted using maceration and soxhletation methods. MTT assay was used to determine proliferation rate of cancer cells. Data were analyzed using linear regression. Actinodaphnine was similar to sitagliptin in terms of binding energy (-8.5 vs. -8.3 kcal/mol) and binding sites at catalytic site (Ser 630 and His 740 residues) and the other site (Glu 205 and Glu 206). Administration of 300 ppm ethanol soxhletation of *Cuscuta australis* was able to inhibit 50% growth of MCF-7 cells. However, a higher dose (400 ppm) of ethanol maceration of *Litsea glutinosa* was required for inhibition of 50% cell growth. Ethanol extract of *Cuscuta australis* and *Litsea glutinosa* has anticancer activity and may become a potential therapy for breast cancer. In future, investigation of the anticancer properties will be used high purity of actinodaphnine.

Keywords: Actinodaphnine, Breast cancer, DPP4 inhibitor, Phytochemicals.

THE IMPACT OF PHARMACY SUPPORT SYSTEM IN THE DETECTION OF DRUG-RELATED PROBLEMS

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ABSTRACT

Faculty of Pharmacy Universitas Gadjah Mada has developed software of clinical information system called Pharmacy Support System (PSS), in which this system is able to assess prescriptions in outpatient and provide warning upon potential DRPs. The efficiency and speed of a system in identifying DRPs can support and optimize the performance of pharmacists. The objective of this research was to determine the time of analysis and the number of DRPs incidences identified by pharmacists with and without PSS assistance. The present research was observational with cross-sectional design. The data collection was done prospectively in outpatients at hospital during January 2016. The research population was patients attending outpatient treatment at a number of hospitals in Yogyakarta with patient inclusion criteria of pediatric, geriatric, and heart disorders. The patients that had met inclusion criteria are identified with the presence or absence of potential DRPs. Observations were conducted to the difference between the analysis and the number of DRPs incidence identified by the pharmacists with and without the assistance of PSS. Furthermore, measurement was undertaken for analysis time and total DRPs incidences. DRPs incidences detected by pharmacists with and without the assistance of PSS indicates significant differences ($p < 0.05$). Pharmacists with the help of PSS can detect DRPs that are not detected by the pharmacist without the help of PSS. DRPs mostly identified by pharmacists with the assistance of PSS are drug interactions and improper doses. Improper doses primarily identified in geriatric and pediatric prescription. Drug interaction warning generally appear in patients with cardiovascular disorder. The DRPs analysis using PSS require a longer time due to prescription's data input process and requirement to read the warnings issued by PSS.

Keywords: Pharmacy support systems, Drug-related problems, Outpatients.

CHITRANONE IN *PLUMBAGO ZEYLANICA* PLANT IS A NEW THYMIDYLATE SYNTHASE INHIBITOR WHICH IS MORE POTENT THAN 5-FLUOROURACIL

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ABSTRACT

5-Fluorouracil (5-FU) has routinely been used for treatment of colorectal and breast cancers. This drug inhibits thymidylate synthase (TS) activity in cancerous cells. The effectivity of 5-FU use reduced because of its serious side effects. *In silico* study is an effective approach for screening herbal drug compounds. Indonesia is one of the country around the world with vast biodiversity of medicinal plants. Therefore, the aim of this study was to identify TS inhibitor from Indonesian herbal compounds which were more potent than 5-FU. AutoDock Vina 1.1.2 software was used to dock structurally between herbal compounds and TS. Fluorodeoxyuridine monophosphate (fdUMP) or 5-FU metabolite served as the standard ligand. Their binding complexes were visualized using PyMOL software. Toxicity and target specificity of the best herbal compounds were determined using *in silico* study. Quercetin (-8,7 kcal/mol), Lobeline hydrochloride (-9,0 kcal/mol), luteolin (-9,0 kcal/mol) dan chitranone (-10,9 kcal/mol) have lower binding energy than fdUMP (-8,4 kcal/mol). There was only chitranone that had similar binding sites at Arg⁵⁰ and Asn²²⁶ residues compared with fdUMP. Mutagenic effect was found only in Quercetin but it had the highest fit score against TS (4.661). The next fit score was luteolin (4.474) and chitranone (4.093). Chitranone was found highly abundant in leaves and roots of *Plumbago zeylanica* plant. Chitranone is more potent than 5-FU as a TS inhibitor *in silico* study. *In vitro* study was required for further analysis of anticancer properties of chitranone in *Plumbago zeylanica*.

Keywords: 5-Fluorouracil, Herbal compound, Molecular docking, *Thymidylate synthase*.

EFFECT OF ZINC SUPPLEMENTATION ON NEUTROPHIL LYMPHOCYTES RATIO AS SYSTEMIC INFLAMMATION INDICATOR OF DIABETIC FOOT ULCER PATIENT

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ABSTRACT

Diabetic foot ulcer (DFU) patients had some clinical finding of zinc deficiency. That impact to immune functions, hormon regulation, delayed wound healing and lead poor prognosis which is characterized by an increase of Neutrophyl Lymphocytes Ratio (NLR) value. This study aimed to evaluate zinc supplementation effect on NLR with three cut off point (2,89; 3,95; 5,25). An experimental randomized control trial study was conducted to evaluate pre-post zinc serum and pre-post NLR. The inclusion criteria was DFU grade I-III Wagner scale. All patients (n=24) received same treatment as they need, but treatment group (n=12) received oral 40 mg zinc once daily. Levels of zinc had significant correlation with NLR DFU Patients with $r = 0.742$ and $p < 0.001$. Zinc serum pre-supplementation control group patients was $48,25 \pm 9,45$ (66-35) mg/dL and treatment was $42,33 \pm 11,60$ (56-16) mg/dL. NLR of control group patients was (1,1-10,5); 6 patients with $NLR > 2,89$, and treatment group was (1,3-16,2); 6 patients with $NLR > 2,89$. Zinc serum post-supplementation control group patients was $43,41 \pm 7,93$ (64-31) mg/dL and treatment group was $61,92 \pm 11,66$ (78-43) mg/dL. NLR post-supplementation control group (0,91-10,8); 5 patients with $NLR > 2,89$, treatment group (0,96-2,4); while no patient with $NLR > 2,89$. 40 mg zinc supplementation once daily for 4 weeks on DFU patients with zinc deficiency may improve NLR of the patients.

Keywords: Zinc serum, Zinc deficiency, Zinc supplementation, Diabetic foot ulcer, gangren, Diabetes Mellitus Type 2, NLR, Neutrophyl Lymphocytes Ratio, Systemic inflamation indicator.

THE EFFECT OF TRANEXAMIC ACID USED AS ANTIFIBRINOLYTIC THERAPY FOR HAEMORRHAGIC STROKE PATIENTS TO GLASGOW COMA SCALE FOR THE FIRST 7 DAYS

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ABSTRACT

The use of tranexamic acid as anti-fibrinolytic therapy in patients with hemorrhagic stroke is intended to prevent re-bleeding due to fibrinolytic activity that often occurs in 24-48 hours after onset. Re-bleeding is an important cause of bad outcomes that result in loss of consciousness and even death. The administration of the anti-fibrinolytic tranexamic acid in patients with hemorrhagic stroke can reduce the occurrence of re-bleeding but it also can increase poor outcome caused by cerebral ischemia that can worsen the patient's condition. The purpose of this study was to determine the effectiveness of the use of tranexamic acid in patients with hemorrhagic stroke. This study used observational study design, cohort, prospective and multicenter. Statistical testing is done by analyzing the GCS score on day 1st, day 3rd, and day 7th between the treatment groups hemorrhagic stroke patients who received tranexamic acid therapy as anti-fibrinolytic therapy in Bethesda Hospital for 23 patients compared with a control group of patients with hemorrhagic stroke who did not receive tranexamic acid therapy as anti-fibrinolytic therapy in the Dr. Sardjito Hospital for 23 patients. The statistical analysis of the independent t-test showed that there was no significant difference between the average GCS score of day 1st ($p=0.262$), day 3rd ($p=0.293$), and day 7th ($p=0.648$) between treatment group and control group. The statistical analysis of the Mann-Whitney showed that there was no significant difference comparing the difference between the pre and post GCS score at treatment group and control group ($p=0.158$). Administration of tranexamic acid in patients with hemorrhagic stroke (treatment group) gives the same clinical response compare to the patients who did not receive tranexamic acid therapy (control group) based on assessment of the Glasgow Coma Scale score (GCS).

Keywords: Hemorrhagic stroke, tranexamic acid, Glasgow Coma Scale (GCS), anti-fibrinolytic.

SECONDARY METABOLITES OF INDONESIAN HERBAL PLANTS HAVE POTENTIAL TRANSFERRIN RECEPTOR 2 AGONIST IN SILICO FOR TREATMENT OF IRON DEFICIENCY ANEMIA

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ABSTRACT

Iron Deficiency Anemia (IDA) is the most common nutrient disorders in the world. Interaction between Holo Transferin (Holo-Tf) and Transferrin Receptor 2 (TfR-2) can stimulate hepcidin expression. Recently, Indonesian herbal plants have widely been used as herbal medicine but TfR-2 activator from phytochemicals has not been established. Therefore, the aim of this study was to explore phytochemicals of Indonesian herbal plants with TfR-2 activator. The *SWISS-MODEL* software was used to make human TfR-2 protein model. Holo-Tf structure from *Protein Data Bank* was used as a standard ligand. The Holo-Tf was truncated and left amino acid residues surrounding active sites at Arg466 and Arg689. All Indonesian phytochemicals which had a three-dimensional molecular structure were used in this study. *AutoDock Vina 1.1.2*, *Chimera 1.10rc* and or *Pymol 1.7* software were used to analyze the phytochemical-TfR-2 binding complexes. *Adenosine* ($-6,4 \pm 0,1$ kcal/mol), *strigol* ($6,8 \pm 0,0$ kcal/mol), *piperine* ($-7,7 \pm 0,0$ kcal/mol), *kaempferol* ($-8,7 \pm 0,1$ kcal/mol) and *dihydrokaempferol* ($-10,2 \pm 0,1$ kcal/mol) have lower or equal binding energy than that of the standard ligand ($-6,4 \pm 0,1$ kcal/mol). In addition, the five phytochemicals could interact not only with Arg466 and Arg689 in active sites of TfR-2 but also with other residues Met460, Arg468, Leu630 in earlier active site and Arg642, Gly644 in later active site. Five different secondary metabolites of Indonesian herbal plants may become potential candidate of TfR-2 agonist. Further investigation using biochemical assays is required for verification of TfR-2 agonist activities.

Keywords: Iron deficiency anemia, Molecular docking, Phytochemical, Secondary metabolites, TfR-2.

DRUG-RELATED PROBLEMS STUDY IN PRIMARY HEALTH CARE IN SLEMAN, YOGYAKARTA, INDONESIA

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ABSTRACT

Drug-related problem (DRP) is any undesirable event experienced by a patient that involves in drug therapy and the goals of therapy. There is still lack of published large-scale studies describing DRPs in outpatient settings from primary health care in Indonesia, whereas such data could help in reducing DRPs and optimize drug therapy to improve health care and reduce cost. The aim of this study was to describe the number and types of DRP and the risk factor for DRPs. The study was a descriptive study with cross-sectional design. The data were taken from outpatient prescriptions in four primary health cares in Sleman, Yogyakarta, Indonesia. A number of 1,787 prescriptions from top 10 diagnoses in primary health care in Sleman have been collected during February until May 2016. The main outcome measures were the number and types of DRPs and also risk factor for DRPs. The result of this study showed 744 (41.6%) prescriptions have DRPs. The type of DRPs was: 500 (29.1%) prescriptions have medication use without indication, 387 (21.66%) prescriptions have potential drug-drug interactions, 165 (9.23%) prescriptions have sub therapeutic dosage problem, 104 (5.82%) prescription have untreated indications, 20 (1.12%) prescription have improper drug selection, and 16 (0.9%) prescription have over dosage problem. In addition, children (≤ 18 years) and polypharmacy were associated with increased risk of DRPs (OR 1.415 [1.183-1.691] and OR 1.372 [1.229-1.532] respectively).

Keywords: Drug-related problem, Primary health services.

CUBEBIN, GIBBERELLIN AND KAEMPFEROL ARE POTENSIAL CANDIDATES OF ADENOSINE MONOPHOSPHATE-ACTIVATED PROTEIN KINASE ACTIVATOR

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ABSTRACT

Cancer cells re-program their energy metabolism in order to escape from host metabolic stress and to maintain cancer cell growth. Inhibition of adenosine monophosphate-activated kinase (AMPK) activity occurs in poor differentiated cancers. Adenosine monophosphate (AMP) accumulation in the cytoplasm can activate AMPK, leading to increase of catabolism and decrease of anabolism. Bio-computational approach has often been used for drug development in recent years. In Indonesia, herbal products are widely used for treatment of some human diseases. So, this study aimed to explore an AMPK activator derived from phytochemicals of Indonesian herbal plants by using molecular docking technique. AMPK structure was obtained from protein data bank and AMP was used as the standard ligand. Molecular structures of phytochemicals were obtained from *PubChem NCBI*. AutoDock Vina 1.1.2 software was used to analyze binding energy of phytochemical-AMPK complexes. Interaction between phytochemicals and AMP was visualized using PyMol 1.7 and Chimera 1.9 software. AMP interacted with AMPK at Asp⁸⁹, Asp²⁴⁴, and Asp³¹⁶ residues with binding energy -7.5, -8.3 and -8.6 kcal/mol respectively. Cubebin bound to AMPK at Asp⁸⁹ with -9.3 kcal/mol energy and at Asp²⁴⁴ with -10.1 kcal/mol energy. A higher binding energy was observed in Gibberellin A17 (-8.8 and -9.3 kcal/mol) and kaempferol (-8.5 and -8.8 kcal/mol) compared to cubebin. Cubebin, gibberellin and kaempferol might be an AMPK activator in silico. In future, docking data of these phytochemicals should be verified by using another endogenous ligand of AMPK.

Keywords: AMPK, Cancer metabolism, Herbal plant, Molecular docking, Phytochemical.

ANTIBIOTIC USAGE IN INTENSIVE CARE UNIT OF A PRIVATE HOSPITAL IN ROTTWEIL GERMANY

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ABSTRACT

Generally, almost 70% of Patients in Intensive-Care Unit (ICU) receive antibiotics, which will lead in the higher risk of clinical and economic problems. The study was aimed to evaluate antibiotic usage and the reasons of using antibiotics in ICU. This is descriptive evaluative with cross-sectional study design, in-depth interview with enumerate modes as data content analysis, to 2 medical-doctors whose caring for the ICU patients, and 4 hospital pharmacists. All of ICU patients during January to July 2015 with inclusion criterias male and female above 14 years old who received antibiotics during hospitalization in ICU. Exclusion criterias are incomplete or unreadable medical records. Among 80 males (59%) and females (41%) of ICU patients, there are only 41% receiving antibiotic. Age ranged from 15 - 93 years, duration of hospitalization range from 3- 20 days, with diagnosis pneumonia (25%), COPD (16%), sepsis (16%), acute cystitis (16%), ulcer (11%), GE (4%) and others (12%). Types of antibiotic used are Meropenem (30%), Taxobactam (15%), Ceftriaxone (10%), Doxycycline (10%), Cyprofloxacin (8%), and others (27%). According to the medical-doctors point of view, there are not all of ICU patients need antibiotics. They prescribe antibiotics based on the clinical, laboratory, and roentgen test. Blood culture test is only done when the patient is suspected with sepsis. When the patient indicates intolerance, the first line medicine will be replaced by the second line. There is no specific guideline for the hospital. They use AWMF as a guideline which is always revised every 5 years and accessible through the internet. Antibiotic dose is calculated based on the kidney function. Pharmacists are not involved in the treatment especially in controlling the possibility of DRPs. As a consequence, there are some DRPs cannot be solved optimally. Contribution of pharmacists in controlling DRPs is urgently needed.

Keywords: Antibiotic, ICU, Hospital.

RESIDENTIAL EFFECT ON ADHERENCE OF HYPERTENSIVE PATIENTS

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ABSTRACT

Based on data from Basic Health Research on 2013, the prevalence of hypertension was increased to 25.8%. Hypertension can be controlled by taking medication regularly and healthy lifestyle. The factor that can improve the success of the treatment of hypertension is patient adherence in taking medicines. Residential was expected to provide education and understanding of therapy also ensure that patients can take the medicine properly, therefore it can improve patient adherence in taking medicine. The aim of this research was to determine whether there is effect of residential on antihypertensive patient adherence in taking medicine. Experimental research design was used in this research. There were 70 hypertensive patients involved. They were member of Chronic Disease Management Program from 7 family physicians in Banyumas, Central Java. The participants were divided into control groups (35 patients) and residential groups (35 patients). All of the participants received standard information about antihypertensive drugs usage. Residential was intervention done by giving information about hypertension, diet and exercise for 10 until 20 minutes at patient's house. Pill count was used to measure patient adherence to antihypertensive drugs used. According to statistical analysis by Chi-Square Test, there was residential effect on antihypertensive patient adherence ($p=0,000$).

Keywords: Residential, Hypertension, Adherence.

TOPICAL APPLICATION OF CARP (*CYPRINUS CARPIO*) SCALES MICRO-EMULSION AS ANTI-AGING CANDIDATE

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ABSTRACT

Collagen is one of the protein in fish scales. Collagen has a major structural component of white connective tissue covering almost 30% of the total protein in the body tissue of vertebrates and invertebrates (Ali, 2010). Collagen from carp (*Cyprinus carpio*) scales can be anti-aging candidate. The study begun with isolation of collagen from carp fish scales and selection of micro emulsion base clarity, presence or absence of separation, and stability of pH during 1 week. Selected F3 with the composition of tween 80: distilled water (52,98:7,28) as a micro emulsion base. Micro emulsion containing 19,81% oleic acid as an oil phase, 72,63% tween 80 and propylene glycol as surfactants and co-surfactant, 0,3% collagen from carp fish scales, and 7,26% distilled water. Evaluation of micro emulsion containing carp scales was done by organoleptic observations, measurements of viscosity and pH, preparations stability testing by freeze and thaw and the effectiveness of anti-aging. Ternary phase diagrams of the orientation of the base formula shows five such formulations are in the region are stable micro emulsion. The higher composition of surfactant, spot formation will further increase and further to the left and produce a micro emulsion that is clear and transparent. The results of the centrifugation test showed the micro emulsion containing collagen from fish scales carp remains stable and there is no separation. Dispersed preparation showed perfect solution and physically stable. Stability studies with freeze and thaw method showed that micro emulsion formula has globule size <1000 nm. The effectiveness of the micro emulsion containing collagen from carp fish scales (*Cyprinus carpio*) as an anti-aging cosmetics was assessed by using a skin analyzer which determine the value of collagen fibers and skin elasticity before use and after use of such micro emulsion. The results showed stable micro emulsion and the type pf micro emulsion formed is oil in water. The effectiveness of anti-aging showed by increased percentage of collagen fibers and elasticity in women aged 46-55 years old.

Keyword: Carp scales (*Cyprinus carpio*), Micro emulsion, Anti-aging.

ANTI-ULCER ACTIVITIES OF THE AQUEOUS EXTRACT OF *NEPHELIUM LAPPACEUM* L. LEAVES IN RATS INDUCED WITH PYLORUS LIGATION AND ACETYLSALICYLIC ACID

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ABSTRACT

Nephelium lappaceum L. is one of the plants that can be used to treat diseases in stomach. The aim of this study was to investigate anti-ulcer activity of aqueous extract of *Nephelium lappaceum* L. leaves using pylorus ligation and acetylsalicylic acid -induced models. Aqueous extracts of *Nephelium lappaceum* L. leaves are used at dose of 200, 400 and 500 mg/kg bw, whereas cimetidine 72 mg/kg bw as compared group. The results showed that the aqueous extract of *Nephelium lappaceum* L. leaves at dose of 200, 400 and 500 mg/kg bw have anti-ulcer activity in experimental rats when compared to a control group ($p < 0.05$). Aqueous extract of *Nephelium lappaceum* L. leaves at dose of 500 mg/kg bw has the highest percentage of inhibition of 80.19% when compared to the control group ($p < 0.05$) and the activity were similar with the normal group in order to heal gastric ulcers in rats. Aqueous extract of *Nephelium lappaceum* L. leaves at dose of 200, 400 and 500 mg/kg bw have potential anti-ulcer activity in rats induced with pylorus ligation and acetylsalicylic acid.

Keywords: *Nephelium lappaceum* L., Anti-ulcer, Aqueous, Pylorus ligation, Acetylsalicylic acid.

PREPARATION AND CHARACTERIZATION OF PYRIMETHAMINE-MALIC ACID CO-CRYSTAL

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ABSTRACT

Pyrimethamine (PIR) is an antimalarial drug with low solubility in water, so its bioavailability is low. Crystal engineering through the formation of co-crystals is capable of changing the physicochemical properties of the Active Pharmaceutical Ingredient (API), including its solubility. The purpose of this study was to characterize the formation of co-crystals between pyrimethamine (PIR) and malic acid (MAL) and determine its effect on the solubility and dissolution rate of pyrimethamine. PIR-MAL co-crystal was prepared by a solvent-drop grinding method in an equimolar ratio using a few drops of mixture of acetone: water (1:1). Characterization of the co-crystal was conducted by Powder X-ray Diffraction (PXRD) and Fourier Transforms Infrared (FTIR) spectroscopy methods. The change in the crystal habit after recrystallization of PIR-MAL physical mixture in a solvent mixture of acetone:water (1:1) was observed using a polarizing microscope. The physicochemical properties were examined by solubility test in water at room temperature and dissolution in pH 1.2, 4.5, and 6.8 buffer solution medium. The PXRD pattern of grinding result different from the PXRD pattern of its pure components which indicated the PIR-MAL co-crystal formation. PIR-MAL co-crystal has different infrared spectrum and crystal habit with its parent components. The solubility of pyrimethamine from PIR-MAL co-crystal was higher than pure PIR. The dissolution rate of pyrimethamine that released from PIR-MAL co-crystal was faster than pure PIR.

Keywords: Pyrimethamine, Malic acid, Co-crystal, Solubility, Dissolution rate.

THE PREVENTIVE AND CURATIVE POTENTIAL OF SAMBILOTO AFTER VARIOUS EXTRACT METHOD TO DIABETIC MODEL RATS

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ABSTRACT

This study was aimed to find out the best of extraction methods and the way of application of sambiloto extract. Three kinds of extraction methods were used such as maceration, soxhletation (ethanol extracts) and infusum (water extract). A number of the 50 male rats were used; which were groups as 1) natural control (7 rats); 2) natural + Sambiloto extracts @ 4 rats (12 rats); 3) Streptozotocyn (STZ) induced diabetic rat (7 rats); 4) Preventive treated model (12 rats) and 5) curative treated model (12 rats). The preventive treatment, each extract was applied daily within 1 week prior STZ inducement and followed by another 1 week post, while the curative, the extracts were applied post STZ inducement daily for 2 weeks. The examined parameters were body weight, blood glucose and pancreatic endocrine cells using immunostaining method. The results showed that the blood glucose of soxhletation extract treated group was around 300s mg/dL while, the other two groups were reduce to the range of normal level (100s mg/dL) especially, on prevention group although its body weight were not reduced to the previous level yet. The immunostaining evaluation on maceration extract and infusum treatment found that insulin positive cells were produced more in both application methods. The data strongly suggest that soxhletation extract less effective compare to the maceration extract and infusum at both application methods.

Keywords: Immunostaining, Diabetic rat, pancreatic endocrine cells, Sambiloto extracts, Blood glucose.

POTENTIAL OF DUCK EGG WHITE OVERCOMED WITH SUB-ACUTE LEAD POISONING**AULIA A. MUSTIKA^{1*}, LINA NOVIYANTI², ANDRIYANTO¹, MEILISA L. MARGARITA¹**¹Department of Anatomy, Physiology and Pharmacology, Faculty of Veterinary Medicine, Bogor Agricultural University, Indonesia.²Department of Clinic, Reproduction and Pathology, Faculty of Veterinary Medicine, Bogor Agricultural University, Indonesia.

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ABSTRACT

Egg white consist of high protein that has been known to be able to chelate lead from acute poisoning but its potential has not been studied a lot. The potential of duck egg white was evaluated using red blood cell profile and clinical signs. This research used thirty male rats which were divided into 7 groups and 5 replications i.e. rats as control, rats administrated only with lead, rats administrated with lead and antidote. Each treatment group (four groups) was given one antidote i.e. EDTA, 50% egg white, 75% egg white, and 100% egg white. Lead force feeding was conducted by 15 days as well as antidote and completed by blood sampling in the end of each treatment. There was no great influence in hemoglobin but lead decreased total red blood cells ($p < 0.05$) in sub-acute lead poisoning. Rats given 75% and 100% duck egg white as antidote showed increasing in total red blood cell and also faster recovery rate. High concentration of duck egg white had a good result as antidote for sub-acute lead poisoning.

Keywords: Duck egg white, Lead, Potential, Sub-acute.

AZADIRACHTA INDICA SEED EXTRACT AS BIOINSECTICIDES MYIASIS LARVAE**IETJE WIENTARSIH^{1*}, AULIA A. MUSTIKA², RETNO WULANSARI¹, SUSDERTHI WIDHYARI¹, LINA N. SUTARDI¹**¹Department of Clinic, Reproduction and Pathology, Faculty of Veterinary Medicine, Bogor Agricultural University, Indonesia.²Department of Anatomy, Physiology and Pharmacology, Faculty of Veterinary Medicine, Bogor Agricultural University, Indonesia.

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ABSTRACT

Medicinal plants have been used for centuries as remedies for human and animal disease because they contain components of therapeutic value. The acceptance of traditional medicine as an alternative form health care and the development of parasite resistance to the available anti-parasite has led researchers to investigate the larvicidal myiasis activity of medicinal plants. The aim of this study was to investigate the in vitro larvicidal activity of *Azadirachta indica* seed against *Chrysomya bezziana* larvae. Ethanol extract of *Azadirachta indica* seed extract has shown significant effect in reducing the growth of *Chrysomya bezziana* larvae due to contact and digestive effect of the active compounds contained in the *Azadirachta indica* seed. In vitro assessment revealed that the *Azadirachta indica* seed extract was effective to kill *Chrysomya bezziana* larvae which is known as primary agent of myiasis in livestock, wild and pet animals including human in Indonesia.

Keywords: *Azadirachta indica* seed, myiasis, *Chrysomya bezziana*.

ANTIBIOTIC MODIFYING EFFECT OF AMPHICILIN AND ESSENTIAL OIL OF *OCIMUM* *BASILICUM* LEAVES BY GASEOUS CONTACT

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ABSTACT

Essential oil of *Ocimum basilicum* leaves has a distinctive aroma and has a strong antibacterial activity. The major objective of this study was to investigate the synergistic effect of antibiotic modifying ampicillin and essential oil from the leaves of *O. basilicum*. The essential oil was obtained by water-steam distillation and analyzed by GC-MS. The antibiotic modifying effect was performed using minimum inhibitory dose (MID) and gaseous contact method. The GC-MS analysis showed the main constituents of the essential oil were citral (57.7%), alpha-humulene (7.26%) and trans-caryophyllene (3.66%). The gaseous component of the essential oil inhibited the bacterial growth of *Staphylococcus aureus* with MID values of 50 mg/L air. The antibiotic activity of ampicillin has increased to 78,44% against *S. aureus* after contact with the gaseous component of the essential oil. These result indicate that the antibiotic ampicillin had synergistic effect with the essential oil and may be used used as adjuvant therapy against pathogens bacterial infection.

Keywords: Antibiotic, Ampicillin, Essential oil, *Ocimum basilicum*, Gaseous contact.

THE POTENTIALS OF HONEY IN MANAGING BREAST CANCER WOUND A LITERATURE REVIEW

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ABSTRACT

Patients living with breast cancer may develop chronic wounds known as fungating malignant wounds. Caring for a patient with a fungating wound is challenging for the nurse and family as this condition indicates progressive and untreatable disease with limited therapeutic options. This review aimed to explore recent published literature, research and practice in managing breast cancer wounds with a specific focus on the potential values of honey in managing the wounds. Ten databases were searched (CINAHL, EBSCOhost, ProQuest, Google Scholar, Wiley Interscience, Science Direct, Blackwell Synergy, Liebert Online, Internurse, and Gale Cengage) using the search terms 'fungating wound' OR 'malignant wound', 'breast cancer wounds' AND 'honey' AND 'Indonesia'. The search was limited from period of 2006 to 2016, to English and Indonesian language, and only full text articles were included. Reference lists of relevant articles were also hand searched. Results of the search identified twelve articles that met the search criteria. An article published before 2006 was also included on the basis of its relevance. Publications have indicated that a malignant wound represents a cluster of symptoms such as malodor, heavy exudate, pain, bleeding, and various psychosocial issues. In order to stabilize and prevent wound deterioration, the bioactive properties of honey may have potentials to be applied as a single treatment in primary wound dressings to manage offensive odor and heavy exudate. Further research to study native Indonesian honeys' properties will be beneficial to assist with practice decisions.

Keywords: Breast cancer, Fungating wounds, Honey, Wound management

DETERMINATION ACTIVE FRACTION OF *PLUCHEA INDICA*'S ETHANOL EXTRACT AS AN INHIBITOR TO *PSEUDOMONAS AERUGINOSA* MULTI RESISTANT AND METHICILLIN RESISTANT *STAPHYLOCOCCUS AUREUS*

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ABSTRACT

Beluntas leaves (*Pluchea indica* Less.) can be used as a vegetables and traditional medicines. Based on previous research, the extract of beluntas leaf can inhibit the growth of *Pseudomonas aeruginosa Multi Resistant* and *Methicillin Resistant Staphylococcus aureus*. This research was aimed to determine the active fraction as an inhibitor to the growth of *Pseudomonas aeruginosa Multi Resistant* and *Methicillin Resistant Staphylococcus aureus*. Extraction was conducted by soxhlet method with ethanol. Fractionation was performed by Vacuum Liquid Chromatography with eluent combined n-hexane, ethyl acetate, and methanol. Merging fractions were monitored by Thin Layer Chromatography (TLC) based on the spots pattern in the chromatogram with visible light, UV light 254 nm, UV light 366 nm. Minimum Inhibitory Concentration (MIC) test by microdilution method to *Pseudomonas aeruginosa Multi Resistant* showed that active fractions were B, C, D, E, F and G. The most active fraction for MIC to *Pseudomonas aeruginosa* was F fraction (1,5625% - 3,125% b/v). Furthermore, the result of MIC to *Methicillin Resistant Staphylococcus aureus* showed that active fractions were B, C, D, E, F and G fraction, and the most active fraction is B (0.78125-1,5625% b/v). The results data indicate the Beluntas Leaves (*Pluchea indica* Less.) positive potentially for Minimum Inhibitory Concentration (MIC). In addition, isolation for the active fractionation will increase the value of the Beluntas Leaves (*Pluchea indica* Less.)

Keywords: *Pluchea indica* Less, *Pseudomonas aeruginosa Multi Resistant*, *Methicillin Resistant Staphylococcus aureus*, Fractionation.

PROBIOTIC SUPPLEMENTATION INDUCED PLATELET FUNCTION INDEPENDENT FROM IMMUNE SYSTEM MODULATION: AN EXPERIMENTAL STUDY IN RABBIT

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ABSTRACT

Probiotics consumption is reported to be beneficial for people with autoimmune disorders, a condition which also common cause of low platelet count. In this study we investigate the effect of probiotics to immune system's and platelet's markers *in vivo*. A group of New Zealand Rabbit were supplemented with *Lactobacillus plantarum* IS-10506 probiotics for 14 days, and the white blood cells (WBC), lymphocytes (LYM), monocytes (MON), and granulocytes (GRA) counts were calculated as marker for immune system from the blood plasma, while platelet count (PLT), plateletcrit (PCT), mean platelet volume (MPV), and platelet distribution width (PDWc) were also calculated as marker for platelet functions. Value of each marker was then compared to those of control groups. The results showed that PLT and PCT values were significantly increase after the supplementation, compared to those of control group. However, WBC, LYM, MON, GRA, MPV and PDWc were not significantly affected. This result suggested that in this study, *Lactobacillus plantarum* IS-10506 probiotic consumption may contribute to the platelet regulation, which however, did not through immune system modulation.

Keywords: Probiotics, *Lactobacillus plantarum* IS-10506, Platelet Function Independent, Immune System.

EFFECT OF *EUCALYPTUS* AND COCONUT OIL ON PRESSURE ULCER OCCURENCES**ANASTASIA A. ISKANDAR*, JANE FREYANA**

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ABSTRACT

This study aimed to identify the effect of *Eucalyptus* and coconut oil on pressure ulcer occurrences. If incidence of pressure ulcer increase, the length of stay in a hospital and the overall cost of health care will increase too. Subjects were immobilized cancer patients with score range of Braden Scale 6 - 16. Forty-eight subjects were divided into 2 groups, using concequitive hospital admission technique and first in first out approach. Twenty three subjects were treated using coconut oil, while 25 subjects were treated using eucalyptus oil. By using quasi experiment and one group pre-test and post-test design, each subject was repositioned regularly every 2 hours, each bony prominence was massaged for 15 times/0.5 minute. They were observed every day until the first grade pressure ulcer was found or subject was discharged.

Using Mc. Nemar test, it indicated that both oils can prevent pressure ulcer formation. Although some studies show that pressure ulcer occurrences can be prevented by repositioning patients every two hours. Nevertheless this study found that either *Eucalyptus* oil or coconut oil can be used to reduce the incidence of pressure ulcer among immobilized cancer patients. As eucalyptus oil has additional effect as vasodilator, it is necessary to conduct a further study to find the effect of eucalyptus oil on wound healing process of cancer.

Keywords: Cancer, Coconut oil, *Eucalyptus* oil, Pressure ulcer.

FORMULATION AND EVALUATION OF HAIR TONICS OF CELERY (*APIUM GRAVEOLENS* L.) ETHANOL EXTRACT AND THE HAIR GROWTH ON RABBITS

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ABSTRACT

The activity of hair tonics of celery (*Apium graveolens* L.) ethanol extract and the hair growth activity on rabbits had been done. The hair tonics formulation were evaluated for 28 days during storage. The evaluation covered of physical stability, homogeneity, viscosity, also including measurement of pH and specific gravity. The evaluation result showed that formulations had physical stability and good homogeneity. Formula 4 with extract concentration of 8% was more higher activity to stimulate hair growth. From irritation test showed that this hair tonics were safe and did not irritate skin.

Keywords: Ethanol extract of celery (*Apium graveolens* L.), Hair tonic, Hair grower.

PATIENT EXPECTATION, PERCEPTION AND SATISFACTION IN PHARMACEUTICAL CARE PROVIDED AT PRIMARY AND SECONDARY HEALTH CENTER IN THE INDONESIAN UNIVERSAL HEALTH COVERAGE

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ABSTRACT

Changes in Indonesian health care system into the Indonesian Universal Health Coverage (IHC) since 2014 along with a capitation system that applies in it had an impact on the role of the pharmacist. Aim of this study is to determine the implementation of pharmaceutical care by the pharmacist in IHC era through patient point of view as the user of the service. Assessment of patient point of view were evaluated based on the expectations, perceptions and satisfaction with pharmaceutical services that patient obtained. Assessment is done using a closed ended questionnaire that has been tested for validity and reliability. Statement in the questionnaire using Likert scale and classified in five levels of classification ranging from very low to very high. Patients who become research subjects are patients who met the inclusion and exclusion criteria specified. There were 602 patients who become research subjects. There are six groups of aspects of pharmaceutical services were assessed by the patient in general services, infrastructure, prescription screening and waiting time, dispensing, drug information and counseling along with monitoring. At the primary level health facility, the average patient expectations to the six aspects of the pharmaceutical service are in very high level (3.45), the perception are in medium level (2.78) hereby the satisfaction are in medium level (-0.67). At the secondary level health facility, patient expectations are in the high level (3.11) while the perception are in medium level (2.42) and satisfaction are in medium level (-0.69). The results showed that both the first and secondary level of health facility, patients have high expectations towards the implementation of pharmaceutical care by pharmacists. But in reality, patients experience that not all aspects of pharmaceutical services are well established. It is seen from the perception assessment that are in middle level. This causes the level of patient satisfaction with pharmaceutical services in health facilities still in middle level. The results of this study can be input for pharmacists and the BPJS to continually improve pharmaceutical care by pharmacists to improve patient satisfaction as users of the service.

Keywords: Expectation, Patient, Perception, Pharmaceutical Care, Satisfaction

DRUG-DRUG POTENTIAL INTERACTION INVESTIGATION TOWARD INPATIENTS ADMITTED TO AN INTERNAL MEDICINE WARD AT GOVERNMENT HOSPITAL, YOGYAKARTA

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ABSTRACT

The aims of this study is to identify the drug-related problems and drug–drug interactions (DDIs) among the inpatients who admitted to an internal medicine ward. A prospective, exploratory study had planned and all the prescription drugs of inpatients admitted to the internal medicine ward At August 2015 are assessed at a Government hospital in Yogyakarta, Indonesia. Descriptive analysis was performed for Socio-demo graphic's patients aspect. Prescriptions of the studied population are compiled both for potential drug interactions and number of cases in each class of 'nature of total number of records reviewed during investigation period are 144. Among these 144 cases, 961 interactions are found. On an average 2 to 10 drugs were prescribed per day hospitalization. In our study, we found that out of the total 961 DDIs, 29 (3%) DDIs are serious in nature while the major proportion (66.5%) of the interactions was also significant. It is noticed that the significant DDIs were found associated with the number of drugs ($P = 0.002$) and age ($P = 0.019$) of the patients. Findings of this study revealed a high occurrence of DDIs. Number of drugs, age, number of hospitalized days, and number of co morbid medical conditions are some of the factor demonstrating a possible association with the DDIs.

Keywords: Drug-drug interaction, Internal medicine ward, Inpatient

EVALUATION OF BETALACTAM ANTIBIOTIC AT CISANCA CLINIC SAMARANG GARUT

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ABSTRACT

Investigation on the use of beta-lactam antibiotic at Cisanca Clinic Samarang Garut in Juni to Agustus 2006 had been done. Patient for this research are 1574 people (857 male and 717 female). Research showed that most antibiotic user are adult (20-50 years old which is 28.3 %, most diagnostic is URTI (Upper Respiratory Tract Infection) with 35.4 % cases, non-generic user is higher than generic, the most used betalactam antibiotic in infection teatment is amoxicillin (79.73 %), unappropriate drug used are underdose (0.38 %) and overdose (0.32 %), and the most used duration for antibiotic use is 4 days (53.3 %).

Keywords: Betalactam, Amoxicillin

ANTIMICROBIAL ACTIVITY OF WASTE WATER OF DISTILLED GAHARU (*AQUALARIA SP*) AGAINST *ESCHERICHIA COLI*, *STAPHYLOCOCCUS AUREUS*, AND *VIBRIO SP* WITH AGAR DIFFUSION METHOD

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ABSTRACT

In Kalimantan, waste water of distilled gaharu (*Aqualaria sp*) is traditionally used by the community for treatment of various diseases such as cough, diarrhea, asthma. This study aimed to obtain scientific data of antimicrobial activity of waste water of distilled gaharu (*Aqualaria sp*). The research were conducted using laboratory experimental. Microbial screening test of waste water of distilled gaharu (*Aqualaria sp*) were conducted at concentration of 2%, 4%, 6% dan 8 % against 6 bacteria and one fungus namely *Staphylococcus aureus*, *Streptococcus mutans*, *Salmonella thypi*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Vibrio sp*. Continued with test of minimum Inhibitory Concentration (MIC) and Minimum Killing Concentration (MKC). Microbial screening test waste water of distilled gaharu at concentration of 3 % showed activity of bacteria *Escherichia coli*, *Staphylococcus aureus*, *Vibrio sp*. The value minimum inhibitor concentration (MIC) against *Escherichia coli*, *Staphylococcus aureus* dan *Vibrio sp* obtained at concentration 3 % and the value Minimum Killing Concentration (MKC) obtained at concentration 6 % and 8 %. The value effective concentration of inhibition obtained at concentrations of 5%, 10% and 15 %.

Keywords: Antimicrobial Activity, Gaharu (*Aqualaria sp*), *Escherichia coli*, *Staphylococcus aureus*, and *Vibrio sp*.

EFFECT OF PHARMACIST COUNSELING ON KNOWLEDGE AND QUALITY OF LIFE FOR OVARIAN CANCER PATIENT TREATED WITH PACLITAXEL-CARBOPLATIN

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ABSTRACT

Combination of taxanes and platinum may increase the survival rate of ovarian cancer patients, however, it may not consequently improve their quality of life (QoL). Pharmacist counseling, as a part of healthcare professional team, is reported to be important to improve the patient knowledge and QoL. Therefore, this study was aimed to investigate the effects of pharmacist counseling on knowledge and quality of life of ovarian cancer patients treated with Paclitaxel and Carboplatin. In a pre- and post-experimental control design, eligible subjects were assessed for their knowledge to medication and QoL using questionnaires. After filling the questionnaires, control group received the standard drug information, while the intervention group received chemotherapy counseling by pharmacists. On the next cycle of chemotherapy, both of group filling the same questionnaire again. The results suggested that pharmacist counseling may play roles in patients knowledge and QoL.

Keywords: Counseling pharmacists, Ovarian cancer, Paclitaxel-carboplatin, Side effects, knowledge, Quality of life.

EFFECT OF PHARMACIST COUNSELING ON KNOWLEDGE AND ADHERENCE OF LUNG TUBERCULOSIS PATIENT IN BALAI BESAR KESEHATAN PARU MASYARAKAT (BBKPM) IN GARUT

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ABSTRACT

Adherence of patients is one key to successful treatment of chronic diseases including TB treatment. One of the factors of the lack of compliance is due to a lack of knowledge about the disease in tuberculosis patients. To increase knowledge and adherence of TB one way is with a given counseling by health workers, one of them by the pharmacist. As this study was aimed to determine the effect of pharmacist counseling on knowledge and adherence of patients with lung tuberculosis. The method used was Quasi Experimental and Non Randomized Control group pretest and posttest design. This study uses a questionnaire at the time of pre-test before treatment and post-test questionnaires after being treated. The treatment is given in the form of counseling about the disease and how treatment of TB. At the time of subsequent treatment in the evaluation of knowledge and adherence of patients using the same questionnaire from the results of the study showed that pharmacist counseling effect on knowledge and compliance of TB patients.

Keywords: Counseling pharmacists, Lung tuberculosis, Knowledge, Adherence.

ANALYSIS OF ORAL ANTI DIABETIC'S ADHERENCE ON TYPE 2 DIABETES MELLITUS THAT USE RE REFERRAL PROGRAM BASED ON HEALTH BELIEF MODEL IN TALAGA BODAS PUBLIC HEALTH CENTER BANDUNG

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ABSTRACT

Type 2 diabetes is a disease that is often found in primary health care. Although the number of available drugs are effective but controlling diabetes type 2 is still not adequate, seen by the increasing number of patients with diabetes type 2. Many factors contribute to the rising number of people with type 2 diabetes one of which is the level of medication adherence in patients who have not controlled. So the purpose of this study was to identify and analyze the factors affecting medication adherence programs refer patients with type 2 diabetes through health centers talaga bodas in the city of Bandung. The method used in this research is descriptive analytic method with cross sectional approach, sample population in this study are patients Referred Program Type 2 diabetes in the health centers talaga bodas by the number of samples taken were 30 people who were taken by purposive sampling technique. Collecting data using questionnaires and data analysis was performed using Chi Square and Spearman's Rho with significantly $\alpha = 0:05$. The results of this paper is expected to provide information and understanding for those who provide health care in the handling of healing or uncontrolled blood sugar levels, especially physicians, pharmacists, patients and their families in order to improve patient adherence so that the quality of life of patients increases.

Keywords: Health centers, Diabetes type 2, Adherence, Treatment, HBM theory.

FLAVANOIDS ISOLATION OF GAHARU LEAVES ((*AQUILARIA MALACCENSIS* LAMK.)

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ABSTACT

Flavonoid compounds were isolated from ethyl acetate fraction of agarwood leaves (*Aquilaria malaccensis* Lamk.). Crude drug powder was extracted by maceration method. It was fractionated by liquid-liquid extraction and vacuum liquid chromatography. The compound was isolated by preparative thin layer chromatography method. Purity test was done by two-dimensional thin layer chromatography. Isolate was supposed to be flavonoid compound class.

Keywords: *Aquilaria malaccensis* Lamk., Flavonoid, Isolation Flavonoid.

COMPARATION ULTRAVIOLET SPECTROPHOTOMETRI AND NITRIMETRIC TITRATION METHOD WITH BIAMPEROMETRIC TECHNIQUE FOR SULFAMETOXSAZOLE DETERMINATION

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ABSTRACT

Sulphamethoxazole is a sulphonamida antibiotic that has an azole compound in its chemical structure and has ultraviolet (UV) absorption at 288 nm. Sulphamethoxazole determination can be performed using either by UV Spectrophotometric or nitrimetric titration methods with biamperometric technique. The aim of this study is to compare the performance of both methods to determine sulfamethoxazole. Determination of optimum measurement condition, precision and accuracy calculation were conducted. The data obtained were compared to assess the performance of both methods. Ultraviolet spectrophotometric method gave recovery value of $97.436\% \pm 0.5826\%$, while nitrimetric method gave recovery of $98.109\% \pm 0.5056\%$. The results showed that the recovery value of both methods are not significantly different ($p < 0.05$) and gave comparable precision and accuracy.

Keywords: UV Spectrofotometric, Nitrimetric Titration, Biamperometric, Sulfamethoxazole.

PREPARATIONS FORMULATION GEL MASK CONTAINING HONEY (*APIS MELLIFERA* SPECIES)**RINY MELIYANA^{1*}, ANAS SUBARNAS¹, KERI LESTARI¹, RINI AGUSTIN², ACHMAD NGADENI²**¹Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran, Indonesia, ²Faculty of Pharmacy, Universitas Jenderal Achmad Yani, Indonesia. Email: meliyanadj.2787@gmail.com**ABSTRACT**

Honey is a viscous liquid, tasted sweet and delicious, bright yellow or golden amber. Honey is a humectant that attracts and increased humidity. Utilization of honey as a mask capable of softened, cleansed, tightened effect, and absorbs oil and dirt from the skin. Utilization of the honey bee (*Apis mellifera* species) as efficacious ingredients to get the right formula in making preparations gel mask. The study was conducted with elected preparations base optimum. The base then developed into a dosage formulation gel mask contained the honey bee (*Apis mellifera*) with different concentrations of 0%, 5%, 7.5% and 10%. Evaluation was performed by observing the physical stability of the preparation during storage time, includes observation of the organoleptic, physical stability (viscosity and pH), and the trial of the preparation (safety trial, the effectiveness of the preparation using a skin analyzer and receipt preparations against the respondent. The results showed that honey can be formulated into dosage masks in gel form by used hydrogels such as Carbopol Ultrez[®] base. Concentration mask preparation contained 5% honey had been able to give effect for softened, moisturize, brighten and cleanse the skin. Four stocks that have been studied show preparation gel mask with honey concentration of 7.5% is the most stable, has the best physical appearance during the storage time, convenient to use and does not cause stickiness after used.

Keywords: Formulation, Gel masks, Honey bees, Effectiveness and safety, Cosmetology.

PREVALENCE OF *bla*_{SHV-12} GENE FROM ISOLATE EXTENDED-SPECTRUM *B-LACTAMASE* (*ESBL*) PRODUCING *KLEBSIELLA PNEUMONIAE* IN DR. HASAN SADIKIN HOSPITAL

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ABSTRACT

Bacterial resistance becomes a serious problem throughout the world, including in Indonesia. *Klebsiella pneumoniae* is one of the bacteria known to produce ESBL. ESBL enzyme is capable of hydrolyzing and disabling various β -lactam class of antibiotics, including third-generation cephalosporins, penicillins, and aztreonam that are more difficult to treat. One of the genes that have been shown to produce an ESBL enzymes are *bla*_{SHV-12} genes. The aim of this study was to reveal the prevalence of *bla*_{SHV-12} genes in isolate ESBL-producing *K. pneumoniae* which derived from clinical specimens from blood of patients infected with ESBL producing *K. pneumoniae* at the Dr. Hasan Sadikin Hospital, Bandung. In this study, an Amplification-Refractory Mutation System (ARMS) method used for detecting the *bla*_{SHV-12} gene from ESBL-producing *K. pneumoniae*, and visualized by agarose gel electrophoresis.

The presence of *bla*_{SHV-12} gene was indicated by the appearance of mutation sites at codons L35Q, G238S and E240K. It was concluded that most of the sample tested in this study were *bla*_{SHV-12} gene positive from 45 samples of ESBL-producing *K. pneumoniae*

Keywords: Amplification-Refractory Mutation System (ARMS) method, *bla*_{SHV-12} Gene, Extended-spectrum β -lactamase (ESBL), *Klebsiella pneumoniae*.

CHARACTERISTIC DETERMINATION AND PHYTOCHEMICAL SCREENING OF *ARTOCARPUS COMMUNIS* FORST

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ABSTRACT

Artocarpus communis Forst or *Sukun* is widely used as traditional medicine in Indonesia. Therefore, information of the characteristic and chemical substance in *Sukun* that has therapeutic effects remains unknown. The objective of the study was to determine the characteristic and phytochemical screening of *Sukun* leaves that have different ages and were characterized by leaf colors (green, yellow and brown leaves). Microscopic and macroscopic characteristic observation and phytochemical screening of *Sukun* leaves were performed. The results showed that microscopic and macroscopic of those leaves were relatively similar. The water content of green, yellow and brown *Sukun* leaves respectively were 8,5% v/b, 5% v/b, 8% v/b, water soluble extractable compounds were 14,72% b/b, 13,70% b/b, 15,06% b/b, ethanol soluble extractable compounds were 8,75% b/b, 7,79% b/b, 8,57% b/b, total ash content were 11,46% b/b, 9,58% b/b, 8,85% b/b, water soluble ash content were 7,01% b/b, 5,59% b/b, 4,55% b/b, acid insoluble ash content were 0,63% b/b, 0,30% b/b, 0,17% b/b, and lost on drying parameters were 10,15% b/b, 8,34% b/b, 8,94% b/b. Phytochemical screening result showed the presence of chemical substances of flavonoid, saponin, poliphenol, monoterpene and sesquiterpene on all colored leaves. Steroid chemical compound was only found in green leaves. Further investigations are needed to isolate the active chemical substance and the pharmacological effects.

Keywords: *Artocarpus communis*, *Sukun* leaves, Characteristic determination, Phytochemical screening.

LINGUISTICS-BASED PHARMACEUTICAL PRODUCT NAMING METHODS: A MORPHOLOGICAL STUDY ON OTC PRODUCTS IN INDONESIA

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ABSTRACT

Researches on morphology are found in almost all languages in the world in which they are classified into both pure or micro linguistics and applied studies. This research, however, has distinction compared to the former ones since it involves another discipline, namely Pharmacy. Entitled "Linguistics-based Pharmaceutical Product Naming Methods: A Morphological Study on OTC Products in Indonesia", it discusses the application of word formation theories in the product naming methods of some Over The Counter (OTC) products in Indonesia. The method used in this research is qualitative descriptive, then the theories adopted is Morphology, especially word formation which discusses the process of forming the words written by Marchand (1992) and McMannis (1998), Product Naming Strategy by Danesi (2004) and theory of Over The Counter products taken from FDA. The data used in this research are taken from electronic media informing the over the counter products in Indonesia. The results of this research show that a proper and precise OTC product naming method can employ the linguistics aspect especially word formation theory in order to describe the kinds, characteristics, and the usage of the products. The theories found in this research are blending, clipping, compounding and coinage. Then, the meaning analysis used is based on lexical and grammatical meaning. By understanding the word formation process used as the product brand methods, consumers are able to recognize the products more easily. In addition, the product naming methods also can assist the company in establishing the product brands and use it as the methods of their product naming.

Keywords: Word Formation, Product Naming Methods, OTC.

THE ANTIBACTERIAL ACTIVITIES OF ETHANOL EXTRACT JAWER KOTOK LEAVES (*COLEUS SCUTELLARIOIDES* [L.] BENTH) AGAINST ACNE BACTERIAL FROM FACE

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ABSTRACT

The misused of antibiotics will resist the bacteria. The increase of resistances needs to find the others antibiotics, other alternative resources is very important to inhibit or obstruct the bacteria. One of resources is Jawer kotok (*Coleus Scutellarioides* [L] Bent) leave. The objectives of this research are to find Jawer kotok leave's ethanol extract as the antibacteria activities of pimples skin, those are *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus sp.*, and *Micrococcus sp.* Those bacteria were examined with gradual extract concentrate, starting from 20%, 40%, 60%, 80%, and also compared with 1% clindamycin antibiotic. The result of the research showed that the ethanol extract of Jawer kotok leave potentially as the antibacteria agent. It was asserted that Jawer kotok leave very sensitive of all bacteria test and classified as the strong potentially inhibition. The diameter of bacteria inhibition zone between 13.80 ± 1.09 mm until $17,00 \pm 0,70$ mm. Jawer kotok leave have the activity as the antibacteria agent because it contains secondary metabolite like flavonoids, polyphenols, tannins and terpenoid.

Keywords: *Coleus scutellarioides* [L.] Benth, antimicrobial activity, Jawer kotok, flavonoids, tannin, polyphenols, terpenoids.

EFFECTIVENESS OF THERAPY AND QUALITY SERVICES IN HYPERTENSIVE AND DIABETIC PATIENTS AMONG JKN AND NON-JKN HEALTHCARE

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ABSTRACT

Hypertension and Diabetes Mellitus Type II are chronic diseases with high prevalence and results the high cost treatment. The principle of “cost-effective” by National Health Insurance Program (JKN) awareness patients, they will receives less comprehensive benefits compared to general patients. The experiment was conducted to compare JKN against Non-JKN in term of outcome and quality of services by held care provider. Random selection technique was used to select patients in the internal outpatient department of Udayana Hospital, since October 2015 to March 2016. Outcome therapy was measured by its ability to reduce the blood pressured and glucose level, analyzed using paired t-test followed by independent T-test ($p < 0,05$), and also observed Adverse Drug Reaction (ADR) event. A 20-items questionnaire was supplied to the patients and will be classified using a likert scale, the service quality measured by Servqual score and analyzed using Friedman test followed by Wilcoxon test ($p < 0,05$). The result show greater reduction of blood glucose levels (Fasting Blood Glucose Level and Postprandial Blood Glucose Level) with lower incidences of ADR (Hypoglycemia, nausea, vomiting, and diarrhea) in Diabetic JKN ($140,12 \pm 35,87$ and $159,48 \pm 35,64$ mg/dl; 16,50%, 3,00%, 3,00%, and 3,00%) patients compared to Non-JKN ($98,98 \pm 31,70$ and $119,44 \pm 39,55$ mg/dl ; 22,50%, 7,00%, 6,00%, and 6,00%). Meanwhile there's no significant outcome therapy with zero ADR between JKN and Non-JKN in Hypertension patients. According to average servqual score, both JKN (-0,95) and Non-JKN (-0,78) were classified Low, and there's no significant difference in quality services among JKN and Non-JKN Health Care.

Keywords: JKN, hypertension, diabetes mellitus, effectiveness, quality services

GENETIC POLYMORPHISM OF *BRAIN-DERIVED NEUROTROPHIC FACTOR GENE* rs6265 AS PSYCHOLOGICAL DISTRESS RISK FACTOR

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ABSTRACT

Genetic polymorphism on *brain-derived neurotrophic factor gene* Val66Met (rs6265) has always been related to human psychological condition. As a developing country, Indonesia has yet to obtain Indonesian's genomic data so the aim of this research is to investigate BDNF gene rs6265 genotype profile and to find out the relevance between BDNF gene rs6265 polymorphism and stress level. Assessment of stress level was done by using The Kessler Psychological Distress Scale questionnaire whilst genetic polymorphism analyze was conducted using Amplified Refractory Mutation System Polymerase Chain Reaction method. 148 subjects were recruited in this research. Pearson's chi-squared test was used to find out relevance between genetic polymorphism and stress level ($p=0,751$). The majority subjects' genotype is GA heterozygote. This study showed no relevance between BDNF gene rs6265 polymorphism and stress level.

Keywords: Brain-derived neurotrophic factor, rs6265, Amplified refractory mutation system, The Kessler psychological distress scale, Stress level.

IN VIVO ANTIMALARIAL ACTIVITY OF DICHLOROMETANE-ETHYL ACETATE-METHANOL FRACTION OF MUNDU'S BARK (*GARCINIA DULCIS* (ROXB.) KURZ) IN SWISS MICE

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ABSTRACT

Malaria is an infectious disease caused by Plasmodium parasite that attacks red blood cells. Garcinia genus contained high in xanthone compounds and showed antimalarial activity. The aims of this research were to determine in vivo antiplasmodial activity of dichloromethane-ethyl acetate-methanol fractions of Mundu's bark (*Garcinia dulcis* (Roxb.) Kurz) especially fraction V in male and female Swiss strain mice and to determine effective dose 50% (ED₅₀) as anti plasmodial agent in the same test animals. Making fraction V of Mundu's bark which KKV method was applied used dichloromethane-ethyl acetate-methanol. The same profiles from eluent composed fraction 18 and 19 were categorized as fraction V. Those were tested in each of test animals with dose 12.5; 25; 50 and 100 mg/kg body weight. Negative control group was given CMC suspension, and positive control by chloroquint. Plasmodial activity was obtained by calculating percentage of parasitemia, parasitemia inhibition and effective dose 50% (ED₅₀) determination. The data were treated by linier regresion analysis. The results shown that fraction V of Mundu's bark had antiplasmodial activity in male and female Swiss strain mice by in vivo with ED₅₀ were 62.09 mg/kg BW and 96.52 mg/kg BW, respectively.

Keywords : Mundu's bark, plasmodial activity, ED₅₀.

THE ACTIVITY TEST OF ETHANOLIC EXTRACT OF SEMBUNG'S ROOT-EESR (*BLUMEA BALESEMIFERA* [L.] DC) ON INCREASING APPETITE OF FEMALE WISTAR RATS

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ABSTRACT

Lack of appetite is one of the signs of various diseases. This can be seen from either diet behaviour and habit personally or physical and psychological aspects. Empirically, root of Sembung can be used as appetite enhancer/booster. The aim of this study was to analysis of ethanolic extract of Sembung's root on increasing appetite that exposed in female Wistar rats. This research was laboratory experimental which used 25 female Swiss Wistar rats that had 200 g on weight average as test animals. Rats, then, were randomly divided into 5 groups (n=5) and treated during 14 days (CMS 0.5%, normal control, EESR dose I 600 mg/kg body weight, EESR dose II 1,200 mg/kg body weight, EESR dose III 1,800 mg/kg body weight). Everyday, body weight and leftover food of each group were calculated. Increasing appetite effect could be seen from increasing animal body weight and reducing leftover food (everyday). The results shown that ethanolic extract of root of *Blumea balsamifera* (L.) DC could increase body weight with average 16 g for dose I, 15.4 g for dose II and 14 g for dose III while average on leftover food was the smallest amount achieved by dose I, compared with dose II and III. Administering of normal control and CMC 0.5% shown that appetite only increased slightly with average on 20.3 g and 18.8 g of leftover food. ANOVA test presented significant value ($p < 0.05$) in reducing amount of leftover food and increasing body weight. Exposing of ethanolic extract of Sembung's root *Blumea balsamifera* (L.) DC indicated increasing appetite behaviour of female Wistar rats.

Keywords: *Blumea balsamifera* (L.) DC, Appetite, Body weight.

ANTIOXIDANT ACTIVITY OF POSLEN LEAVES (*TALINUM TRIANGULAR* (JACQ.) WILLD) ETHANOL EXTRACT WITH DPPH (2,2-DIPHENYL-1 - PICRYLHYDRAZYL) METHOD

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ABSTRACT

Poslen leaves (*Talinum triangular* (jacq.) Willd) is family of *Portulacaceae*. Poslen leaves contain flavonoids, which alleged have the antioxidant effects. This study aims to prove the antioxidant activity of Poslen leaves ethanol extract by reducing free radical DPPH. This experiment is purely experimental. The sample consisted of two groups: 1 treatment group and 1 control group. The treatment group is ethanol extract of Poslen leaves consisted of 3 series concentration 200 ppm, 400 ppm and 600 ppm, meanwhile the comparison group is vitamin C 2 ppm, 4 ppm and 8 ppm. There were 5 times replication for each concentration. The results of the research showed that ethanol of extract Poslen leave has an antioxidant activity reduce free radical DPPH IC₅₀ value 252.63 ppm and vitamin C IC₅₀ value is 10.25 ppm. The antioxidant activity ethanol extract of Poslen leaves has 25 time lower than vitamin C

Keywords: Poslen leaves (*Talinum triangular* (jacq.) Willd), DPPH, IC₅₀, Antioxidants.

EFFICIENCY ANALYSIS OF DRUG PROCUREMENT WITH ABC AND EOQ METHOD IN AL IHSAN HOSPITAL BANDUNG

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ABSTRACT

Effectivity of inventory management can reduce the price of drugs and operating expenses, which led to increased gross revenue and net income. The process of drug procurement must consider and planned about the planned procurement of the drug to be done, so that the cost the hospital pharmacy of Al-Ihsan Hospital (IFRS) become more efficient. The purpose of this research is to analyze the procurement of drugs at IFRS of Al-Ihsan Hospital in Bandung. This study used quantitative research with observational analytic design. The study was conducted at Al-Ihsan Hospital in Bandung for 3 years from 2012 until 2015. Quantitative data collection is done by depth interviews on the subject of research that linked to the drug plan and prescribers of Al-Ihsan Hospital in Bandung (primary data) and the data of drug consumption, the unit price, and all the reports or records that exist in the IFRS (secondary data). Procurement of drugs in IFRS of Al-Ihsan Hospital is done by the frequency of ordering drug obtained from a history of drug purchases in the previous year. This plan resulted in the costs incurred by the IFRS for the procurement of supplies, drugs become larger and less efficient. Application of the method ABC and EOQ in the planning of drug provision in IFRS of Al-Ihsan Hospital capable of produce a lower in total cost than the methods that applied under IFRS policy of Al-Ihsan Bandung. Analysis of Pareto-based drug procurement is done by using the EOQ method is more efficient than the calculation applied under IFRS policy of Al-Ihsan Bandung.

Keywords: Drug procurement, Inventory, Pareto, ABC, EOQ.

EVALUATION OF CORTICOSTEROID USED FOR CHILDREN IN PKU MUHAMMADIYAH YOGYAKARTA HOSPITAL ON JANUARY – MARCH 2015

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ABSTRACT

Corticosteroids are anti-inflammation and auto-immune effect medicines which must be used according to appropriate dosage and objectives to prevent side effects. This present study aimed to evaluate corticosteroids prescription for pediatric medical treatment in PKU Muhammadiyah Yogyakarta hospital, based on the medicine's type, therapeutic regimens and objectives, as well as evaluation on indication–dosage appropriate. This research was observational design, and descriptive study with retrospective data collection. Data from pediatric medical record prescribed with corticosteroids on January–March 2015, including sex, age, diagnose, the type of corticosteroids, dosage, and therapeutic regimens, which then used to evaluate indication–dosage appropriate based on standard by Drug Information Handbook, American Society of Health-System Pharmacists, and hospital's formulary. The results from outpatient 161 people, inpatient 29 people indicated that type of corticosteroids often used in outpatient was triamcinolone 77.91% and inpatient was dexamethasone injection 48.65%. Rate of corticosteroids used in outpatient was 98.77% oral and inpatient was 70.27% parenteral. Corticosteroids mostly used for acute bronchitis 42.24% and asthma bronchitis 27.59%. Indication appropriate in outpatient was 90.06%, and inpatient was 89.66%. Dosage appropriate in outpatient was 100%, and inpatient was 48.65%. This research was triamcinolone per oral often used for treatment acute bronchitis, and dexamethasone injection for asthma. Indication and dosage appropriate in outpatient more than inpatient.

Keywords: Corticosteroids, Pediatric, Evaluation.

THE DETERMINATION OF PLUMBUM LEVELS ON PATIN FISH (*PANGASIU SUTCHI*) AND NILA FISH (*OREOCHROMIS NILOTICUS*) FROM SAGULING RESERVOIR WITH ATOM ABSORPTION SPECTROPHOTOMETRY METHOD

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ABSTRACT

Research about determination of plumbum (Pb) rate in patin fish and nila fish which there is in Saguling reservoir West Java has been done. The reservoir is suspected has contaminated heavy metal from industry waste. Method applied in this research is Atom Absorption Spectrophotometry (AAS), using this methode because having high selectivity as well as having high accuracy. Before all is done destruction process fish fresh to eliminate organocompound which can disturb measurement process of plumbum rate in fish sample which would in checking. After done research is gotten average plumbum rate of patin fish and nil fish is 0.57 mg/kg and 0.25 mg/kg. Rate within measure safe in fresh fish and its processing which has been specefied by Badan Pengawasan Obat dan Makanan (BPOM) which is established plumbum maximum rate in fresh fish and its processing is equal 2 mg/kg fresh fish.

Keywords: Plumbum, Nila fish, Patin fish, AAS.

ASSESSMENT OF DRUG USE PATTERN IN CHILDREN USING WHO PRESCRIBING INDICATORS AT SOME PHARMACIES IN BANDUNG, INDONESIA

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ABSTRACT

Irrational use of drugs can lead to adverse drug reactions, increasing morbidity and mortality, as well as the rising cost of treatment to be incurred by the patient. The aim of this study was to assess prescribing patterns in patients age 0-5 years using World Health Organization prescription indicators. A cross-sectional study with retrospective data collection was conducted at some pharmacies in Bandung. The average number of drugs prescribed per prescription was 3. The percentage of generic drugs and prescription drugs listed in the National Essential Drugs List respectively 10.36% and 19.92% of the 4,518 prescribed medication. Antibiotic prescribing as much as 50.66% of the total number of prescriptions and there are not any prescriptions contain injection. Increase in generic drugs and essential drugs prescribing needed to improve the accuracy, safety, and the rational use of drugs and reduce drug costs incurred by the patient. Antibiotics prescribing should not excessive in order to prevent further spread of cases of bacterial resistance.

Keywords: Prescribing indicator, Polypharmacy, Bacterial resistance.

PHARMACISTS' KNOWLEDGE IN THE MANAGEMENT OF TUBERCULOSIS IN MEDAN, INDONESIA

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ABSTRACT

Tuberculosis (TB) remains as a major health problem because of its increasing prevalence especially in developing countries like Indonesia. Pharmacists as healthcare providers must have enough knowledge to contribute in preventive and curative programs of TB. This study aimed to assess the knowledge of pharmacists who practice in Medan, Indonesia (n=117) on TB and its treatment using a predetermined questionnaire. This study found that mean age of the respondents was 38.8 ± 12.3 (years) with working experience of 9.5 ± 8.4 (years). Most of them (76.1%) were female and 74.4% were married. The present study proved that only 41.0% of them had good knowledge on TB and more than half of them (58.1%) had fair knowledge on TB. Knowledge of the pharmacists was not associated with gender, $p = 0.67$ as well as their place of practice, $p = 0.66$. This study confirms that knowledge of pharmacists on TB still needs improvements to optimize their role in preventive and curative programs of the disease.

Keywords: Tuberculosis, Pharmacist Knowledge, Preventive, Curative.

EFFECTIVENESS OF VIDEO CAMPAIGN ON THE RATIONAL USE OF ANTIBIOTICS AT ONE OF PRIMARY HEALTHCARE CENTERS IN BANDUNG

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ABSTRACT

Antibiotics are used to treat infections or diseases caused by bacteria. Overuse and misuse of antibiotics can increase the development of antibiotic-resistant bacteria. Video has been recognized to be able to increase the community awareness on health promotion programs. This observation study was conducted by considering the implementation of video campaign as the new intervention at primary healthcare center. The aim of this study was to analyze the effectiveness of video campaign antibiotics on improving the knowledge level of patients related to the use of antibiotics at primary healthcare center. A quasi experiment method was applied in this study by taking pre- and post-test studies into account. Patients with chronic diseases at Talaga Bodas primary healthcare center was selected as subjects in this study. Patients' knowledge related to the rational use of antibiotics was 59% before they were exposed by the intervention. The video campaign significantly increased the patients' knowledge up to 74%.

Keywords: Drug resistance, video effectiveness, health education, primary healthcare center.

COST-EFFECTIVENESS ANALYSIS OF CEFTAZIDIME-LEVOFLOXACIN AND CEFOTAXIME-ERYTHROMYCIN AS EMPIRICAL ANTIBIOTIC COMBINATIONS IN RESPIRATORY INFECTION-INDUCED SEPSIS

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ABSTRACT

Pharmacoeconomics has become an important consideration in the selection of therapies, including in patients with sepsis caused by respiratory infection for whom the selection of empirical antibiotic therapies is needed. The aim of this study was to determine the most cost-effective antibiotic combination for respiratory infection-induced sepsis at a public hospital in Bandung, Indonesia. Retrospective, observational, and analytical studies were conducted. Data from 2010-2012 were collected from the medical records of patients with respiratory infection-induced sepsis using a ceftazidime-levofloxacin or cefotaxime-erythromycin combination as their empirical antibiotic therapy. Direct medical costs were calculated from the costs of the empirical antibiotics, medical treatment, supporting medical expenses, administration and hospitalization. Compared with those of other empirical antibiotics, the incremental cost-effectiveness ratios (ICERs) were 3,350 USD and 585 USD for the ceftazidime-levofloxacin and cefotaxime-erythromycin combinations, respectively. Despite the lower medical cost of ceftazidime-levofloxacin, the use of cefotaxime-erythromycin was more cost effective in the context of the cost per life saved.

Key words: Empirical therapy, Cost-effectiveness, Pharmacoeconomics, Sepsis, Antibiotics.

THE DRUG PRESCRIPTION OF OUTPATIENT IN MEURAXA HOSPITAL IN BANDA ACEHVESARA A. GATERA^{1*}, SUMARNI², ISKANI², ARI KURNIAWATI³¹Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran, Indonesia, ²Academy of Pharmacy, Pemerintah Aceh, Indonesia, ³Meuraxa Hospitals, Indonesia. Email: ardhegatera@gmail.com**Abstract**

The rational drug prescription on of the main orientation especially in Health care. One of the proportions to determine by the prescription pattern based on the WHO Prescribing indicators. The irrational prescribing of drugs induced the negative impact like improvidence, adverse drug reactions, and of course decrease the quality of health care. Early survey in this hospital, found the irrational of prescription especially average number of drugs per encounter and Percentage of drugs prescribed by generic name. The Goal of this study is to determine the rationalization of drugs prescription for outpatient in Meuraxa Hospital Banda Aceh. This study used the WHO prescribing indicators, descriptive method with cross sectional system. Taking 100 of the prescriptions as the samples from the hospital with systematic random sampling. The results of this study consist five indicators such as 4,4 per encounter for the average number (≤ 3 per encounter), 60,1% by generic name (100%), 5,6% for Percentage of encounters with an antibiotic prescribed ($\leq 30\%$), 2,4% for Percentage of encounters with an injection prescribed ($\leq 10\%$), 100% for Percentage of drugs prescribed from essential drugs list or formulary (100%).

The result of the study indicate the prescribing in the outpatient of the hospital inappropriate with WHO prescribing indicators especially for average number per encounter and Percentage of drugs prescribed by generic name. In addition, the data of the study seriously considered especially for polypharmacy and improvidence effect.

Keywords: Drugs Prescription, WHO Prescribing indicators, Outpatient of Meuraxa Hospital Banda Aceh

A POWER TEST OF INHIBITORY COMBINATION EXTRACT ALOE VERA GEL (*ALOE VERA*) AND EXTRACT RED GALANGAL (*ALPINIA PURPURATA* K. SCHUM) AGAINST *STAPHYLOCOCCUS AUREUS* AND *ESCHERICHIA COLI*

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ABSTRACT

The Inhibitory Power Test Combination of Extract Aloe Vera Gel (*Aloe vera*) and Extract Red galangal (*Alpinia purpurata* K Schum) against *Staphylococcus aureus* and *Escherichia coli*. This study aims to determine the effect of variations in the combination of aloe vera extract and red ginger that inhibitory against *Staphylococcus aureus* and *Escherichia coli* which are the highest as well as to determine the stability of the chemical and physical quality of inhibition gel in combination selected extracts. The research design used *Completely Randomized Design* (CRD). Extract Aloe vera (*Aloe vera*) and red galangal (*Alpinia purpurata* K Schum) obtained by maceration using ethanol 96%. Tests were carried out, namely the physical quality of the stability test (organoleptic, homogeneity, pH, viscosity, dispersive power) and the inhibitory activity of the gel. Data obtained on organoleptic testing and homogeneity were analyzed descriptively and data obtained on testing pH, viscosity, dispersive power statistically analyzed using *Paired Sample Test*. Inhibition test results were analyzed statistically combined extracts using *One Way ANOVA* and for test results inhibition gel combined extracts were analyzed statistically using *Independent T Test*. Test results show variation extract combination do not affect the physical quality include organoleptic, homogeneity, viscosity, dispersive power, and the pH of aloe vera gel and red ginger during storage. The test results show antibacterial activity inhibition aloe vera gel extract and red ginger provide optimal inhibition against *Staphylococcus aureus* 19.1 mm and 17.67 mm of *Escherichia coli*.

Keywords: Aloe vera extract and red ginger, Antibacterial gel, *Staphylococcus aureus*, *Escherichia coli*.

SATISFACTION SURVEY OF *BPJS KESEHATAN* INSURANCE'S PARTICIPANTS CONCERNING HEALTH SERVICE AT TWO HOSPITALS IN BANDUNG

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ABSTRACT

In 2014, the Government of Indonesia has implemented the health insurance program administered by *Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan*. The purpose of this research are to measure the level of patient satisfaction with health services organized by *BPJS Kesehatan* and to determine aspects of health care that can be improved by *BPJS Kesehatan*. This research is an observational descriptive study conducted at the Dr.Hasan Sadikin Hospital and Dr. TNI AU Salamun Hospital Bandung, by distributing questionnaires following five validated SERVQUAL variables. Furthermore, the analysis of patient satisfaction of *BPJS* based on the results of questionnaires was done and then it was compared with mass media articles. The result show that the percentage patient satisfaction level of participants *BPJS Kesehatan* are 89.7% (inpatient at Dr. TNI AU Salamun), 86.6% (outpatient at Dr.TNI AU Salamun), and 85% (inpatient at Dr.Hasan Sadikin). The analysis questionnaires result show that the highest satisfaction percentage in variable tangible is the aspect of cleanliness and tidiness appearance employees of hospitals (97-98%), variable reliability is service delivery in accordance with the serial number of the queue (94-98%), the active attitude of experts to inquire complaints of patients (96-98%) variable responsiveness, variable assurance is the security and trust aspects of the services provided (96-98%), and variable empathy is using of medical language that is easy to understand (96-99%). The problem that is most complained with the highest percentage of value comes from variable reliability that is the aspect of implementation of the diagnose service, treatment, and care are considered less quickly and precisely with a percentage of 8% from the results of the research and 12% from the mass media.

Keywords: Satisfaction survey, BPJS, Health Services, *BPJS Kesehatan*, Servqual.

FORMULATION AND EVALUATION OF MICROEMULSION ORAL FISH OIL

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ABSTRACT

To formulate and evaluate the microemulsion oral fish oil that is relatively stable in long term and can mask the taste of unpleasant fish oil so it has the added value of the preparation of fish oils and can be accepted by consumers. Four formulas of fish oil microemulsion consisting various concentrations of fish oil, combination of surfactants-co-surfactants (Span 80-Tween 20) and also sucrose solution (50/50 w/w) were made. All formulas consisted fish oil with concentration 93.20%. The difference among all formulas were concentration of combination of Span 80-Tween 20 and sucrose solution. Evaluation for all formulas included organoleptic observations, measurements of pH, viscosity measurement, determination of specific gravity, centrifugation test, freeze and thaw test, and hedonic test. The most stable formula was the formula 2 and 3 with less sucrose solution among all formulas. The results of Hedonic Test in 20 respondents indicated that the formula 4 with more sucrose solution was the most preferred taste among all formulas. This study shows that formulation of fish oil with appropriate concentration of surfactan and sucrose solution can form a stable microemulsion and can mask unpleasant taste of fish oil.

Keywords: Microemulsion, Fish oil, Surfactant, Sucrose, Formula.

QUALITATIVE ANALYSIS OF DICLOFENAC SODIUM

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ABSTRACT

A qualitative analysis of diclofenac sodium using standard and two sample diclofenac sodium tablets has been carried out. The methods used were preliminary test, grouping test, color test, microscopic test, thin layer chromatography, and infrared spectrophotometry. It shows that diclofenac sodium has melting point of 283-285 °C and classified as a fenlactic acid, gives spesific results in color (with Lieberman's test form red-brown colour; Marquis's test form brown colour and Mandelin's test form red-brown colour), and crystal test (in etanol-acetic acid -NaOH form broom crystal), Rf value of 0,86 with thin layer chromatography, and it shows principal peaks of infrared spectrum at spesific wavenumbers 1283-1391 cm⁻¹ show C-O stretching in carboxilate acid; 1452-1577 cm⁻¹ show C=C stretching in aromatic ring; 2919-3260 cm⁻¹ show C-H stretching in aromatic ring; 3362-3386 cm⁻¹ show N-H stretching.

Keywords: Diclofenec Sodium, Qualitative Analysis, Crystal Test.

FORMULATION AND CHARACTERIZATION OF KETOCONAZOLE TABLETS USING SAGO AMYLUM (*METROXYLON SAGO*) PREGELATINAZED AS A DISINTEGRANT AGENT

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ABSTRACT

Sago amyllum (*Metroxylon sago*) is one the foodstuffs in Indonesia as an ingredient disintegrant agent in the tablet supply. But Sago amyllum is rarely used by drugs factory, because of the flowing characteristic and disintegration tablet capacity that is still less than the other disintegrant agent. Sago amyllum needs to be modified with pregelatinized. In this research, it was used Sago amyllum to six formulas. The formulas F1, F2, F3 used sago amyllum with concentration ratio 5%, 10%, and 15% whiles the formulas F4, F5, F6 used Sago amyllum *Pregelatinized* with concentration ratio 5%, 10% and 15 %. All of the formulas contain of active Ketokonazole, Binding agent PVP K-30, Avicel 102 *Diluent*, Mg Stearat *Lubricant* and talk *Glidan*. All formulas had been evaluated about SEM (Scanning Electron Microscopy) Analyze, weight uniformity, friability, hardness, disintegration time, and the ratio of absorption. Tablets were made by direct compressing. Based on this research, 6th formula with the Sago amyllum (*Metroxylon sago*) *Pregelatinized* announced for 15% by giving disintegration time faster with the time 49,6 second, also gave better tablet characteristic than compared with the tablet without sago amyllum (*Metroxylon sago*) *Pregelatinized*. The result from ANNOVA-ONE WAY test was significant time difference of all formulas, than continued with POST-HOC test to observe difference of each formula with the level of confidence (95%).

Keywords: Ketokonazole, Sago amyllum (*Metroxylon sago*), Pregelatinized, ANNOVA ONE WAY test, POST-HOCT test.

THE EFFECT OF PINOGU COFFEE (*COFFEA CANEPHORA* VAR. *ROBUSTA*) TOWARDS DECREASE OF URIN ACID LEVEL IN MALE MICE (*MUS MUSCULUS*)

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ABSTRACT

Coffee is one of the most widely consumed beverages by Indonesian society and other countries in the world. Several studies report that coffee contains polyphenol i.e. chlorogenic acid, which may decrease the level of uric acid in blood. This research aimed at investigating the effect of pinogu coffee (*Coffea canephora* var. *robusta*) to decreased of uric acid level in male mice (*Mus musculus*) which induced by purin feed. This research applied laboratory experimental design in which 15 male white mice were divided into 5 groups; each group consisted of 3 mice. Group I as negative control, group II as positive control, and group III, IV, V as treatment control which given 0,104 mL, 0.312 mL and 0,624 mL coffee solutions. Each group was induced with fresh chicken liver homogenates 0.5 mL/20 g BW orally, and then the blood was taken for uric acid level measurement. The measurement was taken three times such as beginning of uric acid measurement (H_0), uric acid after purin feeding diet (H_7) and uric acid after treatment (H_{15}). The total of uric acid content was measured by spectrophotometer UV-Vis enzymatic method. The result showed that pinogu coffee (*Coffea canephora* var. *robusta*) contains polyphenol i.e. chlorogenic acid that can decrease the uric acid level of male mice (*Mus musculus*) which induced by purin diet. The biggest reduction of uric acid by pinogu coffee was showed in group V receiving 0.624 mL (55.695 %) with uric acid reduction close to normal (0.5-1.4 mg/dl) was 1.5 mg/dl.

Keywords: Uric acid, Coffee, Chlorogenic acid.

CYTOTOXIC ACTIVITY FROM ETHANOL EXTRACT STEM YELLOW WOOD (*ARCANGELISIA FLAVA* (L) MERR)

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ABSTRACT

Yellow wood is a group of wild plants and the length can reach 20 meters. Many studies claim that the alkaloid contained in a yellow wood trunk has broad activity. The purpose of this study was to determine the cytotoxic effect of ethanol extract yellow wooden rod against the larvae of *Artemia salina* using BSLT (Brien Shrimp Lethality Test). This study uses three treatment concentrations of ethanol extract yellow wooden rod that is 10, 100, and 1000 ppm. Each concentration using 10 larvae of *Artemia salina* 48 hours old, the treatment was repeated 3 times (triplo), and the observed number of *Artemia salina* larvae died after 24 hours. Furthermore LC_{50} values calculated using probit analysis. Results of a study showing the concentration of 10 ppm per cent mortality of larvae *Artemia salina* 33,33%, 100 ppm percent larval mortality of 36.66%, and 1000 ppm percent larval mortality was 100%. Probit analysis results showed that the LC_{50} value of the ethanol extract of yellow wood trunk is 36 957 ppm. Based on the results of probit analysis, LC_{50} value of ethanol extract yellow wooden rod into the category of highly toxic with LC_{50} values 0 -250 ppm. This shows that the ethanol extract yellow wooden sticks have a cytotoxic effect against the larvae of shrimp *Artemia salina*.

Keywords: Wood yellow, Cytotoxic, BSLT (Brien Shrimp Lethality Test), LC_{50} .

ANTIDIARRHOEAL EFFECT OF WATER EXTRACT OF BROTOWALI [*TINOSPORA CRISPA* (L.) MIERS, MENISPERMACEAE] STEM IN SWISS WEBSTER MOUSE

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ABSTRACT

Antidiarrhoeal effect of water extract of brotowali [*Tinospora crispa* (L.) Miers, Menispermaceae] stem administered orally had been studied in Swiss Webster mouse. On the castor oil induced diarrhoeal test, the extract at a dose of 960 mg/kg body weight able to suppress the onset of diarrhoeal (145.17±51.60) significantly ($p<0.05$) compare to than that of control (68.33±3.98), to improve the fecal consistency to normal consistency (score of 2.33±1.97) compare to than that of control (score of 3.66±1.97), to decrease the percentage of mice diarrhoeal (33.0%) compare to than that of control (66.7%) and to decrease the defecation frequency (1.67±2.25) compare to than that of control (3.00±1.79). On the transite intestinal test, this dose decreased the ratio of the length of the mouse norite transited intestine to the whole length of the mouse intestine (71.58±15.84 cm) significantly ($p<0.05$) compare to than that of control (88.80±8.47 cm). This result indicated that the water extract of brotowali stem at a dose of 960 mg/kg body weight could inhibit the mouse intestine peristaltic.

Keywords: Antidiarrhoeal, Water extract of brotowali [*Tinospora crispa* (L.) Miers, Menispermaceae] stem, Swiss Webster mouse.

FORMULATION AND INCREASE THE RATE OF DISSOLUTION OF KETOCONAZOLE TABLETS WITH THE USE OF POLYSORBATE 80 AS A SURFACTANT

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ABSTRACT

Ketoconazole is a synthetic antifungal substance in azole group which is heredity of imidazole and included in the BCS (Biopharmaceutical Classification System) class II. This compound has poor solubility, so that it needs to improve the water solubility and dissolution rate. The purpose of this research is to formulate and observe the dissolution rate of ketoconazole tablet by using polysorbate-80 as surfactant, and to know the concentration of polysorbate-80 which can produce eligible tablet. Tablet was made by direct compressing method for 4 formulas (F). By varying the concentration of polysorbate-80, there were; F1 0%, F2 1%, F3 3%, and F4 5%. Absorbance was measured by using spectrophotometer UV-Vis in the 5, 10, 15, 20, 25, 30, 35, and 45 minutes. The result of the research showed that the increase on the dissolution rate by adding polysorbate-80 by various concentration above. Formula 4 showed bigger dissolved level with concentration of polysorbate 5%. The addition of polysorbate-80 on concentration 1% produced eligible tablet, and it was seen from tablet physical evaluation that covers uniformity of weight, hardness, friability, and disintegration time of tablets.

Keywords: Ketoconazole, Dissolution, Polysorbate-80.

**COST EFFECTIVENESS ANALYSIS THE USE OF DRUG COMBINATION ANGIOTENSIN-
CONVERTING ENZYME INHIBITORS - DIURETIK AND ANGIOTENSIN RECEPTOR BLOCKERS -
DIURETICS HYPERTENSION PATIENTS WITH CHRONIC KIDNEY DISORDERS IN HOSPITAL
DR. SOEKARDJO**

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ABSTRACT

This research was conducted to determine the cost-effectiveness analysis of the use of combination drug-ACEI and ARB-diuretic diuretics in hypertensive patients with chronic renal impairment at Hospital Dr. Soekardjo. This study uses an observational study with retrospective data collection in cross sectional Hospital Dr. Soekardjo the period May-June 2015. The definition of hypertensive patients with chronic renal impairment is restrained patients who achieved the target reduction of blood pressure $\leq 130/80$ mmHg with improved GFR ≥ 60 ml / min per 1.73 m². The results of the study are predominantly male with the number on the combination of ACEI-diuretic total of 36 patients (80%) and the ARB-diuretic combination of 28 patients (80%). Percentage reduction in mean systolic blood pressure ACEI-diuretic drug combination was 20.8 ± 6.55 whereas the ARB-diuretic drug combination was 28.3 ± 6.45 . The percentage improvement in renal function/Glomerulus Filtration Rate (GFR) mean the combination of ACEI-diuretic drug was 84.63 ± 31.92 and ARB-diuretic was 85.15 ± 40.5 . Direct Medical Costs ACEI-diuretic drug combination Rp 89,648,955 and the ARB-diuretic combination is 100,023,534. The number of patients uncontrolled diuretic drug combination ACEI and ARB-diuretic combination ACER. Value-diuretic drug combination Rp 142.300 ACEI and ARB-diuretic Rp 129.901. ARB-diuretic drug combination has a cost effectiveness analysis which is better than the combination of ACEI-diuretic drugs in hypertensive patients with chronic renal impairment.

Keywords: ACEI, ARB, Cost effectiveness analysis.

FORMULATION AND EVALUATION OF EMULSION-GEL FORM IN TOMATO EXTRACT (*SOLANUM LYCOPERSICUM* L.) AS MOISTURIZERS.

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ABSTRACT

Cosmetic moisturizers (moisturizers) including treatments cosmetic aimed at maintaining the structure and function of the skin of various influences such as dry air, sun, old age, various skin diseases as well as diseases in the body which accelerate the evaporation of the water so that the skin becomes drier. Tomato contains protein that become a source of amino acids for the body that works to build and replace cells damaged. Screening result obtained from the tomato extract contains vitamin A, C, and E. Emulsion-Gel formulation of tomato extract (*Solanum Lycopersicum* L.) as moisturizers. Optimization basis used Carbomer gel with 3 different variations that were 1%, 1.5%, 2%. Optimization of base emulsion used a combination of viscosity enhancers variation in namely crodamol SS and cethyl alcohol. Emulsion-gel form used variation in concentration of tomato extract that were 10%, 15%, 20%. The formulations were evaluated including, organoleptic test, homogeneity test, centrifugation test, pH test, viscosity test, freeze-thaw test, and irritation test. pH and viscosity stability test were conducted for 7 cycles, for each cycle was exposed in 40^o C for 48 hours, then placed at a temperature of 4°C for 48 hours. The result showed that tomato extract with 20% concentration provides good

Keywords: Tomato (*Solanum Lycopersicum* L.), Emulsion-Gel, Moisturizers.

DETERMINATION OF PARAMETERS STANDARDIZATION CRUDE DRUG AND EXTRACT ARABICA COFFEE BEANS (*COFFEA ARABICA* L.)

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ABSTRACT

Quality of crude drug and extract of coffee bean (*Coffea arabica* L.) determined by the value of simplicia and extract standard parameter. In this research, coffee bean derived from Pangalengan, Garut, and Tasikmalaya. Standard parameter that was determined consists of non-specific parameters and specific parameters. The results of crude drug determination of non-specific parameters including the loss of dry ranged from 7.83%-10.66%; water content ranged from 7.20%-7.73%; total ash content ranged from 7.28%-8.24%; and acid insoluble ash content ranged from 0.14%- 0.17%. The results of determination of specific parameters including organoleptic examination simplicia, oval shapes, green color, typical coffee odor, bitter taste; water-soluble contents ranged between 7.83% and 10.67%; levels ethanol-soluble contents ranged between 6.67% and 8.50%. The results of extract determination of non-specific parameters including the specific gravity of the extracts ranged from 0.89-0.92; the loss of dry ranged from 18.16%-21.83%; water content ranged from 5.83%-6.67%; total ash content ranged from 1.77%-3.28%; and acid in soluble ash content ranged from 0.01%-0.02%. The results of determination of specific parameters including organoleptic examination extract, pasta shapes, green color, typical extract odor, bitter taste; water-soluble contents ranged between 29.50% and 32.50%; levels ethanol-soluble contents ranged between 32.00% and 38.16%. Caffeine is used as a marker compound. Caffeine were determined by HPLC, mobile phase methanol: 1% acetic acid: water (40:60) UV277 detector. Caffeine content in crude drug 1.15% - 2.70% and the caffeine content in extract 6.13%-16.74%.

Keywords: Standard parameter, Crude Drug, Extract, Coffee Bean, *Coffea arabica* L.

THE EFFECT OF ETHYL ACETAT (*PHYLLANTHUSBUXIFOLIUS* MUELL, ARG) LEAVES AGAINST LEVELS TOTAL SERUM BILIRUBIN AND LIVER CELL NECROSIS ON MALE WISTAR RATS

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ABSTRACT

Leaves of *Phyllanthusbuxifolius* Muell. Arg. contain antioxidant compounds such as flavonoids, alkaloids, tannins, terpenoids and polyphenols. Antioxidant compounds that are important in protecting the body from free radicals. This study aimed to determine the effects of ethyl acetate fraction seligi leaves against total serum bilirubin levels and necrosis of liver cells of male rats wistar strain. This study used thirty rats were divided into 6 groups. Group I as normal group were given food and water. Group II as negative controls were given paracetamol 500 mg/200 g BW. Group III as a positive control were given curcuma®. Group IV, V and VI as treatment of test fraction 5 mg/200 g BW, 10 mg/200 g BW and 15 mg/200 g BW. The treatment was given for 7 days, on day 5 all group was induced paracetamol, except normal controls group. All groups on days 0th, 4th and 7th calculated levels of serum total bilirubin. On the 7th day of liver histopathology performed on all the groups' observation of liver cell necrosis. Both results were analyzed by *One Way Anova* test. The results showed that the fraction of dose 5 mg/200g BW, 10 mg/200g BW, 15 mg/200g BW was able to inhibited the increase in serum bilirubin levels and inhibited liver cell necrosis wistar male rats. 10 mg/200g BW dose fraction was effective in inhibited increase serum total bilirubin levels and necrosis of liver cells wistar male rats.

Keywords: Seligi leaves, Levels serum total bilirubin, Cell necrosis.

ANTIFUNGAL ACTIVITY OF CHITOSAN AGAINST *CANDIDA ALBICANS* ATCC 90028 AND CLINICAL ISOLATE

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ABSTRACT

The purpose of this research was to determine the antifungal activity of chitosan against *Candida albicans* ATCC 90028 and clinical isolate and to determine Minimum Inhibitory Concentration (MIC) and also Minimum Bactericidal Concentration (MBC). This research was conducted through antifungal activity test of chitosan using agar diffusion method and determine MIC by macrodilution method and also determine MBC by subculture method which derived from the result of MIC. The results showed that chitosan dissolved in 0,250% (v/v) acetic acid did not have antifungal activity because Chitosan cannot be dissolved by acetic acid. MIC of chitosan is 0,006% (w/v) up to 0,003% (w/v) and MBC is 0,012% (w/v) up to 0,006% (w/v). Chitosan have antifungal activity against *Candida albicans* ATCC 90028 and clinical isolate with a concentration of between 0,006% - 0,012% (w/v) of MIC and a concentration of between 0,012% - 0,025% (w/v) of MBC.

Keywords: Chitosan, Antifungal, *Candida albicans*.

ANALYSIS OF CHEMICAL COMPOUNDS AND LOCOMOTOR ACTIVITY OF ESSENTIAL OIL OF SERAI DAPUR (*CYMOPOGON CITRATUS*, STAPF.) ON MICE AFTER INHALATION

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ABSTRACT

An effect of essential oil of serai dapur (*Cymbopogon citratus*, Stapf.), on locomotor activity of male white mice has been carried out using a Wheel Cage method. The essential oil was administered by inhalation at doses of 0.1 ml, 0.3 ml and 0.5 ml and locomotor activity was indicated by number of rotation of Wheel Cage at a 15 minutes interval for 90 minutes. Inhalation of essential oil of serai dapur at the three doses decreased locomotor activity 39.05%, 46.45% and 65.71%, respectively for 90 minutes observation significantly different from the control. Increasing doses increased the effect. These results indicated that essential oil of serai dapur inhibited locomotor activity of mice. The results of GC-MS analysis showed that essential oil of serai dapur contained 43 compounds, the main components are citral [α -citral (26.9%, β -citral (28.9%)], which were assumed as depressant active components.

Keywords: GC-MS analysis, locomotor activity, essential oil of serai dapur (*Cymbopogon citratus*, Stapf.).

THE GEL PREPARATION OF METHYLSILANOL ASCORBATE USING CARBOMER GELLING AGENT

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ABSTRACT

The gel preparation of methylsilanol ascorbate using carbomer gelling agent was carried out. In this work, the gel was performed by varying concentration of carbomer 0.6%, 0.8%, 1%, 1.2% and 1.4%. The results showed that color of gel is yellow clear, having characteristic odour of propylenglycol. The pH value of formula 1 until formula 3 is between 4.5 and 6.5 which conform to skin pH. While the pH of Formula 4 and formula 5 is under the pH skin. The increment of gel viscosity is directly proportional to increment of carbomer concentration. The best of gel is formula 2 with concentration of carbomer 0.8%.

Keywords: Methylsilanol ascorbate, Carbomer, Gel, Skin

PREPARATION AND CHARACTERIZATION OF SNAKEHEAD FISH (*OPHIOCEPHALUS STRIATUS*) DRY EXTRACT NANOEMULGEL USING PARTICLE SIZE ANALYZER

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ABSTRACT

Snakehead fish (*Ophiocephalus striatus*) is a freshwater fish that can accelerate the healing process of burns because it contains high protein and albumin. This study aims to determine the process of preparation and characterization nanoemulgel basis as a carrier in the nanoemulgel preparation of snakehead fish (*Ophiocephalus striatus*) dry extract and to evaluate and test the stability of nanoemulgel of snakehead fish (*Ophiocephalus striatus*) dry extract. This study used snakehead fish dry extract by automizer. Formulation was started by gel optimization use HPMC as a gelling agent and nanoemulsion optimization which based on a comparison of oil (Olive oil), a mixture of surfactant (Tween 80) and co-surfactant (PEG 400), and aquadest. Optimization results showed HPMC as a gelling agent at concentrations of 1.5% and nanoemulsion in F11 (1:11) produced clear nanoemulgel basis, stable, and transmittan value 98.825%. The characterization results nanoemulgel basis with Particle Size Analyzer showed the particle size after 3 measurements at 3.5 ± 0.9 nm, 3.3 ± 0.9 nm, and 1.9 ± 0.5 , polydispersity index values for 3 measurements were 0.988, 0.638, and 0.141 and zeta potential value was -60.72. Data results stated that the basis of nano emulsion was stable with a uniform particle size. Preparations nanoemulgel of snakehead fish dry extract was formulated by the addition of BHT (antioxidant) and DMDM Hydantoin (preservative) which resulted a formula was clear, homogeneous, and limpid yellow, pH 5, and the viscosity of 210 cP. The results of the evaluation and the stability test showed a good level of stability in the viscosity and pH by oneway ANOVA analysis. It showed that no effect viscosity and pH significantly against stability of snakehead fish dry extract nanaoemulgel.

Keywords: Dry extract, Snakehead fish, Nanoemulgel, Particle size analyzer.

THE INFLUENCE OF THE FORMATION OF INCLUSION COMPLEXES ATORVASTATIN WITH β -CYCLODEXTRIN AGAINST OF SOLUBILITY AND DISSOLUTION RATE ATORVASTATIN

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ABSTRACT

Dissolution rate takes is one of the determining factors in the process of absorption of active substances of the preparation are given orally. Drugs that have a low solubility, absorption of his process is determined by the stage better dissolution takes (rate limiting step). The increase in the rate of which can be done with a better dissolution takes away the formation of inclusion complexes of drugs in β -cyclodextrin. Atorvastatin inclusion complexes with β -cyclodextrin is made with the kneading method with comparison of molar atorvastatin- β -cyclodextrin 1:1, 1:2 and 1:3. Study inclusion complex equilibrium provision atorvastatin- β -cyclodextrin is 180, 873M-1. Comparison of solubility of atorvastatin, atorvastatin-inclusion complex of β -cyclodextrin 1:1, 1:2 and 1:3 in PBS pH 6.8 in a row is 1.0283; 1.0502; 1.0238; and 1.0687 mg/ml. number of atorvastatin that being included in β -cyclodextrin in a row is 94.30; 79.78; and 72,02%. The DSC inclusion complex of atorvastatin in β -cyclodextrin 1:1, 1:2 and 1:3 in a row is 82.9; 89.7; and 81.0 ° C. inclusion complex of atorvastatin in β -cyclodextrin showed better dissolution takes rate higher than atorvastatin atorvastatin without inclusion complexes with β -cyclodextrin.

Keywords: Inclusion complex, Beta-cyclodextrin, Kneading method, Dissolution Rate.

ANTISEPTIC ACTIVITIES OF GEL WITH EXTRACT ETHANOL OF KAWANG FRUITS (*LITOCARPUS CELEBICUS*, (MIQ.) REHDER)

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ABSTRACT

Antiseptic is a substance used to inhibit the growth or destroy microorganisms that live on the surface of the body. Their resistance to antiseptics on the market, it needed a new antiseptic based natural ingredients that are relatively safer. Result of thorough kawang fruit (*Lithocarpus celebicus* (Miq.) Rehder) are flavonoids which has antibacterial activity. The purpose of this study to make an antiseptic gel with extract ethanol of kawang fruit and determine its effectiveness against *Staphylococcus aureus* ATCC 29 213 and *Escherichia coli* ATCC 25922. This research method includes extraction, phytochemical screening, testing activities with the agar diffusion, determination MIC and MBC, antiseptic gel formulation, and test preparation gel. The test results showed the kawang fruit has activity against bacteria with value MIC and MBC on *Staphylococcus aureus* ATCC 29213 is 5% (b/b) and 10% (b/b), and on *Escherichia coli* ATCC 25922 is 10% and 20%. The extraction is formulated in the form of a gel with a concentration of 5%, 10%, and 20%. Formulations made using 2% HPMC. The test results show the effectiveness of antiseptic gel extracts have inhibitory better on *Staphylococcus aureus* ATCC 29213 than *Escherichia coli* ATCC 25922.

Keywords: Antiseptic gel, *Lithocarpus celebicus* (Miq.) Rehder, *Staphylococcus aureus* ATCC 29213, *Escherichia coli* ATCC 25922.

INCREASE FUROSEMIDE DISSOLUTION OF THE TABLETS IN THE ARTIFICIAL GASTRIC FLUID WITHOUT ENZYMES PH 1.2 BY USING WET GRANULATION METHOD

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ABSTRACT

Dissolution of furosemide from its tablets prepared by wet granulation method in stimulation of gastric solution without enzyme pH 1.2 medium has been evaluated. The result shows that percentage of dissolution can improve with adding PVP K-30 as excipient. Formulation of mixed system between furosemide-PVP K-30 solution gives higher percentage of dissolution than physical mixed system. NaHCO₃ as disintegrant and Avicel pH 102 as diluent can give better dissolution than conventional disintegrant (NaHCO₃) and diluent (Laktosum).

Keywords: Furosemide, Artificial Gastric Fluid Granulation Method