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Research Article

PRIMARILY EVALUATION FOR QUANTITATIVE AND QUALITATIVE PROPERTIES OF VOLATILE OIL OF CHAST BERRY (*VITEX AGNUS – CASTUS L.*) LEAVES AS MEDICINAL PLANTS GROWN IN MEDIAL REGION OF IRAQ

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ABSTRACT

Objective: The study was designed to evaluation the quantitative and qualitative properties of leaves volatile oil of chast berry plant(vitex agnus-castus L.) as medicinal plant grown in medial region of Iraq as semi-arid contition.

Methods: the plant samples were collected from Al-Musyiab location during vegetative stage. Leaves were dried at room temperature.the volatile oil was obtained by steam distillation processes. Constituents of the volatile oils were determined by gas chromatography.

Results: the results were referred to the percentage of leaves volatile oil was 0.82%.the results were showed the physical properties of volatile oil were (0.980,0.965)mg/ml and 1.548 degree for specific gravity, oil density and refractive index respectively. results of volatile oil analysis were referred to 27 compounds which differ in their percentage. The most main compounds of volatile oil were (44.7%) sabinene, (15.48%) 1.8 cineole, (10.5%) trans-B-franesene, (4.7%) α-terpinyl acetate, (4.5%) B-caryophllene, (2.4%) α-pinine(1.9%) B-myrecene,(1.6%) B-pinine and (1.6%) limonene.

Conclusion: the semi-arid condition that effect on quantity and quality of volatile oil of chast berry leaves compared with cold or moderate condition the best time of leaves volatile oil extraction at vegetative stage pre flowering stage.

Keywords: Chastberry, Volatile oil, Vitex agnus – castus.

INTRODUCTION

Chasteberry (*Vitex agnus – castus L.*) its belong to the Verbenaceae family, is a large aromatic shrub or sometimes smaller slender tree with quadrangular, densely whitish tomentose branchlets up to 4.5 – 5.5 m in height. Bark thin, yellowish grey; leaves 3- 5 foliolate, leaflets lanceolate; terminal leaflets 5 – 10 X 1.6 – 2.3 cm, lateral one smaller, all nearly glabrous. Upper surface of the leaves are green and the lower surface are silvery in colour fig [1]. Flower bluish purple, black when ripe, whereas roots cylindrical, long woody, tortuous with grey brown color. The plant can grow on nutritionally poor soil. V. agnus – castus is widely distributed in the Mediterranean area, up to Central Asia, the tropics and the south of Europe [2]. Chaste tree has been used by Iraqi herbalists to treat menstrual problems resulting from corpus luteum deficiency including premenstrual symptoms and spasmodic dysmenorrheal, for certain menopausal conditions and for insufficient lactation [3]. Leaves are aromatic, bitter, acrid, astringent, anodyne, anti inflammatory, antipyretic or febrifuge, tranquillizer, bronchial smooth muscle relaxant and – arthritic, antihelmintic and vermifuge [4]. Leaves contain an essential oil and other constituents such as an alkaloid nishindine, flavonoids like flavones, luteolin – 7 – glycoside, cataicin, iridoid glycoside, Vitamin c, carotene, glucononital, benzoic acid, B- sitosterol and C- glycoside [5] The leaves essential oil have antifungal, antimicrobial, and insect – repellent qualities [6].This study was carried out to evaluation the quality and quantity of essential oil of leaves that used in traditional medicine in Iraq.

MATERIAL AND METHODS

Leaves of the cultivated plants of chastberry (*V. agnus – castus L.*) were obtained in 2012 from the Al – musyiab location in Iraq, Plant leaves were collected roundonly from a large number of plants, and cleaned from impurities and dust, leaves were dried at room temperature. The volatile oil of leaves was obtained by processes of steam distillation by Clevenger [7], The distillation was carried out with 50g of plant material and 300 ml of distilled water. Series of distillations, each lasting exactly one hour longer, from 1 h to 5 h the essential oil yield was measured and the oil was collected, dried over anhydrous sodium sulphate (Na_2SO_4) and stored at – 20 C° in 2 ml Vials for Further analysis. The extracted oil has been with n – hexane, injected into GLC (gas liquid chromatography) using an auto – sampler and the different compounds have been separated on a HP – INOWOAX (60X0.25 X 0.25 Mm) capillary column. Helium was used as carrier gas (Flow rate 1.5 mlmin-1). The temperature program was 35°C to 230°C (2.5°C per min) in course of time (92mm), injector temperature was 205°C and flame ionization detector used, area percentage were obtained using a PC programmer (Mastro chromatograph data system). For identification of single compound internal and external standard substances have been used, the external standard was obtained from Oma company for chemical compounds.

RESULTS AND DISCUSSION

The result of volatile oil of chastberry leaves were referred to a percentage of volatile oil which reached to 0.82 %. The values of specific gravity, oil density and refractive index, which reached to 0.980, 0.965 mg/ml and 1.548 degree respectively. The result were obtained at Table (1) referred to 27 components of volatile oil of chastberry leaves. The most main compounds of volatile oil were (44.71) sabinene, (15.84%) 1.8 – cineole, (10.6%) trans – B – Franesene, (4.7%) α - terpinyl acetate), (4.5%) B-caryophllene, (2.4%) α - pinine (1.9 %) B- myrcene (1.6%) B-pinine and (1.6%) limonene. The percentage of volatile oil of chastberry leaves in this study was grown under semi – arid regions such as middle of Iraq, may be less than that percentage when plant grown under humid and cold regions [8,9]. The leaves for volatile oil extraction must be collected before flowering stage because the volatile oil concentration would be as a high as possible. The fresh chatsberry leaves is very sensitive and should held in good airing basket in small amount and without pressure because change in their color accrue with formation of brown soft mass lead to bad quality oil and few amount yield of volatile oil [10,11,12]. Therefore the cultivation, Collection and further pharmacological exploration of chatsberry are essential.

Fig. 1: Chasteberry plant at flowering stage

Table 1: The volatile oil composition of Vitex angus – castes Leaves grown in medial region of Iraq.

S. No	Rt	Percentage	Compound
1.	31.5	2.4	α – Pinine
2.	38.7	1.6	B - Pinine
3.	38.3	44.7	Sabinene
4.	48.6	15.48	1.8 – Cineole
5.	63.0	0.19	Linalool
6.	12.69	4.7	α – (terpinyl acetate)
7.	14.47	4.5	B- Caryophllene
8.	15.36	10.5	Trans – B- franesene
9.	30.3	0.67	α- thujene
10.	40.7	1.9	B- myrcene
11.	43.3	0.63	α – phellandrne
12.	55.6	0.78	α – terpinen
13.	48.0	1.6	Limonene
14.	47.1	0.25	P – cymene
15.	39.6	0.55	3 – octanone
16.	95.2	0.39	Citronellol
17.	82.1	1.9	Terpinen – 4 – 01
18.	85.4	0.29	α –terpineol
19.	18.05	0.27	Nerolidol
20.	19.75	1.9	T- cadinol
21.	16.40	1.6	Germacrene D
22.	19.86	0.79	Torreyol
23.	44.3	0.48	8, careen
24.	60.6	0.38	Terpinolene
25.	63.2	0.70	Trans – sabinene hydrate
26.	18.12	0.41	Ledol
27.	56.0	0.44	Cis – sabinene

Rt- Retention time

REFERENCES

1. Duke. J. A. 1985. Culinary Herbs. Trado –medic Books. New York, USA.
2. Joanne, B.,Linda, A.and David, J.2007 Herbal medicine. Third edition. P: 36 – 42.
3. Jakrafarty, L. and Ali, A.1988. Medicinal plants in Iraq. Ministry of Agriculture of Iraq. P: 97
4. Azarnia. M., Ejtemaei, S., Shakoora, A. and Ansari, A. 2007. Effect of *Vitex agues – castus* on mice fetus development. Acta mediea Journal. 45 [4]: 264.
5. Hirobe, C., Qiao, Z., Takeya, K. and Itokawa, H. Cytotoxic flavonoids from *Vitex agues - castus*. Phytochemistry. 1997. Oct; 46,[3]:521 – 524.
6. Chawla, As., Sharma, Ak., Handa, SS. and Dhar,KL. 1992. Chemical investigation of the anti-inflammatory activity of *Vitex negundo* seeds. J. of Nat Prod. 55 [2]: 163 – 165
7. Chalchat, J., Garry, R.and Michet, A. 1991. Chemical composition of essential oil of *(*Calendula officinalis L.). Flovour and Fragrance Journal, 69: 189.
8. Junghus, w. 2002. The cultivation of (*Calendula officinlis* L.) for drug extraction. Phtotherapic. 21: 158 – 159.
9. Yoganarasimhan, SN. 2000. Medicinal plants of India, Tamil, Nadu, [2]: 584.
10. Blade,S., Bandard, M.and Rachid,H.1998. Coriander*(Coriandrum sativum L.)* Production. Journal of Agdex. 20: 147.
11. J.been and Jreedg 2010, Analysis of the essential oils of the steam, leaves and rhizomes of the medicinal plant *costus pictus* from Southern India, int J pharmacy pharm sci,v2,supp12,100-101.
12. Ibrahim S.A., M.J.Hamzah, and A.Majeed. 2013,Analysis with evaluation of drying temperature on essential oil content of Achilled frayrantissima L. and Artemisia herb – alba L.