ANTIPYRETIC EFFECTS OF QURANI PLANTS’ MIXTURE (A NEW PHARMACEUTICAL PRODUCT)

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ABSTRACT

Objective: QURANI plants’ mixture is a new pharmaceutical product composed of some edible and medicinal plants (15 plants) mentioned in the Holy Quran (in a certain percentage, according to that is mentioned in Patent no. 1429/2013, presented to the Academy of Scientific Research and Technology, Egypt in 11/9/2013). The main aim of this work is to determine antipyretic effects of this new mixture and to study side effects of this mixture on many important organs of the body.

Methods: In vivo studies of antipyretic effects of feeding adult female albino rats under investigation with 2, 4 and 8 g/kg of the QURANI plants’ mixture was carried out after 0, 1, 2, 3 and 24 hours of the induction of fever by yeast extract. Important organs (Heart, Brain, Kidney, Liver, Lung, Spleen, Stomach and Colon) weights were checked, in addition to the investigation of their histopathological structures, in order to check any bad side effects of this new pharmaceutical product.

Results: In vivo studies of the antipyretic effect of feeding adult female albino rats under investigation with 2, 4 and 8 g/kg of the QURANI plants’ mixture showed that, the bodies’ temperatures degrees of investigated rats were decreased till reaching to 37°C in case of feeding these rats with all investigated doses of the QURANI plants’ mixture. The highest antipyretic effect was obtained by feeding rats with 8 g/kg of the QURANI plants’ mixture. Based on weights’ estimation and histopathological investigations, it was found that, all investigated doses (2, 4 and 8 g/kg) of the QURANI plants’ mixture have not any bad side effects on many important organs (Heart, Brain, Kidney, Liver, Lung, Spleen, Stomach and Colon) of all examined rats.

Conclusion: Results of the antipyretic effect of the QURANI plants’ mixture will lead us to more biological and chemical investigations of this new, cheap and safe pharmaceutical natural product.

Keywords: Antipyretic effect, Edible and medicinal plants, QURANI plants’ mixture, Histopathological studies.
Ginger (Zingiber officinale), a member of the Zingiberaceae family, is a well-known spice used in the daily diet in many Asian countries. It is a rhizomatous plant grown throughout South-eastern Asia, China and in parts of Japan, Austria, Latin America, Jamaica and Africa. It has been used as a spice and medicine in India and China since ancient times. It was known in Germany and France in the 9th century and in England in 10th century for its medicinal properties. Over three quarters of the world population still rely on plants and plant extracts for health care. Ginger compounds are active against specific type of diarrhea which is leading to cause death in infants in developing countries. Moreover, it has been found that, ginger is effective in treating nausea caused by sea sickness, morning sickness and chemotherapy, though it was found superior over a place for post operative nausea. In addition, it has been reported that, the main ingredients of ginger like volatile oil, gingerol, shogaol and daryl heptanoinds work as antioxidant, anti-inflammatory, anti-lipid, anti-diabetic, analgesic, antipruritic and anti-tumor. Moreover, it is consumed worldwide as flavoring agent which is used extensively in food, beverage, and confectionary industries in the products such as marmalade, pickles, chutney, ginger beer, ginger wine, liquors, and other bakery products. In South India, ginger is used in the production of a candy called Injimurappa meaning ginger candy in Tamil. Currently, there is a growing interest to detect natural compounds characteristics and activities, like plant extracts of herb and spices for the preservation of foods, flavor characteristic and sometimes show antioxidant activity as well as antimicrobial activity [15-28].

MATERIAL AND METHODS

Plant material

Fifteen edible and medicinal plants mentioned in the Holy Quran were purchased from the Egyptian market, these plants were washed carefully with distilled water and surface sterilized by 70 % ethanol for 20-30 seconds, then they cut to small pieces, dried at room temperature (25°C) till complete dryness, then these plants were grinding to give a fine powder, then mixed in a certain percentage [1-2].

Animals and Diet

Thirty six adult female albino rats weighing 125-140 g were obtained from the Animal House of the National Research Centre, Dokki, Giza, Egypt. Animals were divided into six groups, each group consisted of six rats from the Animal House of the National Research Centre) and fasted for 19 hours. Then all groups were allowed post operative nausea. In addition, it has been reported that, the main ingredients of ginger like volatile oil, gingerol, shogaol and daryl heptanoinds work as antioxidant, anti-inflammatory, anti-lipid, anti-diabetic, analgesic, antipruritic and anti-tumor. Moreover, it is consumed worldwide as flavoring agent which is used extensively in food, beverage, and confectionary industries in the products such as marmalade, pickles, chutney, ginger beer, ginger wine, liquors, and other bakery products. In South India, ginger is used in the production of a candy called Injimurappa meaning ginger candy in Tamil. Currently, there is a growing interest to detect natural compounds characteristics and activities, like plant extracts of herb and spices for the preservation of foods, flavor characteristic and sometimes show antioxidant activity as well as antimicrobial activity [15-28].

Table 1: The antipyretic effect (measured in °C) of the Qurani plants’ mixture after 0, 1, 2, 3 and 24 hours of inducing fever by yeast extract (1= Control group of rats, 2= Non-treated injected group of rats with yeast extract, 3, 4, 5 = Groups of rats those feeding with 2, 4 and 8 g/kg of the Qurani plants’ mixture, respectively, and 6 = Positive control group of rats (Rats those administered paracetamol, 20mg/kg/day)), (n= 6 rats).

<table>
<thead>
<tr>
<th>Time</th>
<th>Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0 hour</td>
<td>37.280 ±0.040</td>
</tr>
<tr>
<td>1 hour</td>
<td>37.040 ±0.010</td>
</tr>
<tr>
<td>2 hours</td>
<td>37.140 ±0.030</td>
</tr>
<tr>
<td>3 hours</td>
<td>37.220 ±0.080</td>
</tr>
<tr>
<td>24 hours</td>
<td>37.220 ±0.040</td>
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<tr>
<td>Average</td>
<td>37.1800 ±0.050</td>
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</table>

RESULTS AND DISCUSSION

The antipyretic effect of the Qurani plants’ mixture

Results in Table.1 showed that, the maximum antipyretic effect was induced fever. After the induction of fever, these rats were divided to 5 groups as follows: 1) Group of six rats was given 20 mg/kg paracetamol orally using stomach tube. 2-4) Three groups of rats were feeding with 2, 4 and 8 g/kg of the QURANI plants’ mixture, respectively. The last group is non-treated injected group of rats with yeast extract. Body temperatures were estimated after 0, 1, 2, 3 and 24 hours of inducing fever by yeast extract to all treated groups compared to controls [29]. All animal treatments were conducted according to the Ethics Committee of the National Research Center and in accordance with the recommendations for the proper care and the use of laboratory animals (NIH Publication No. 85-23, revised 1985) in accordance with international ethical considerations.

To study side effects of feeding rats with 2, 4 and 8 g/kg of the QURANI plants’ mixture on many important organs, weights of Brain, Heart, Lung, Liver, Kidney, Spleen and Stomach were investigated.

Histopathological study

Heart, Brain, Kidney, Liver, Lung, Spleen, Stomach and Colon were removed. Slices from each organ were fixed in 10 % formalin for 24 hours. Organs were washed in running tap water over night, afterwards, they were dehydrated in ascending grades of alcohol, cleared in xylol, embedded in hard paraffin wax (melting point between 55°C) for 90 minutes, then paraffin wax blocks were prepared. Paraffin sections were cut specially at 8 µm thickness using a rotating microtome. Sections were mounted on slides smeared with egg albumin. Slides were spread on a hot plate, kept at a temperature of about 40°C later; slides were kept for 2 hours in an incubator at 37°C to dry. Such steps were done to avoid detachment of sections during subsequent of staining. Paraffin sections were used to demonstrate the general histopathological changes by using Haematoxylin & Eosin stain [30].

Statistical analysis

Results were expressed as mean ± SD, they were analyzed by one way ANOVA. The differences between means were tested at P <0.05 by least significant test (LSD). In all statistical tests, the probability level (P <0.05) was considered significant. Spearman correlation coefficient was used to determine the relationship between different variables. All analysis was made by SPSS version 16.0 for windows (Statistical package for Social Science, Chicago, USA). Replicate numbers in these experiments are 6 replicates.
Studies of side effects of feeding rats with the QURANI plants’
mixture on some important organs, based on results presented in
Table 2, it is clear that, feeding rats with 2, 4 or 8 g/kg of the
QURANI plants’ mixture have not any bad side effect on weights of
many important organs under investigation (Heart, Brain, Kidney,
Liver, Lung, Spleen, Stomach and Colon).

Table 2: Weights (in grams) of some important organs (Brain, Heart and Lung, Liver, Kidney, Spleen and Stomach) of investigated rats (1= Control group of rats, 2= Non-treated injected group of rats with yeast extract, 3, 4, 5 = Groups of rats those feeding with 2, 4 and 8 g/kg of the Qurani plants’ mixture, respectively, and 6 = Positive control group of rats (Rats those administered paracetamol, 20mg/kg/day)). (n= 6 rats).

<table>
<thead>
<tr>
<th>Organs</th>
<th>Groups</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Brain</td>
<td>0.910</td>
</tr>
<tr>
<td>Heart+Liver</td>
<td>1.198</td>
</tr>
<tr>
<td>Lung</td>
<td>±0.100</td>
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<tr>
<td>Liver</td>
<td>5.494</td>
</tr>
<tr>
<td>Kidney</td>
<td>±0.210</td>
</tr>
<tr>
<td>Spleen</td>
<td>0.412</td>
</tr>
<tr>
<td>Stomach</td>
<td>1.145</td>
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</table>

Histopathological studies on some important organs of investigated rats:

Results of histopathological studies on important organs of
investigated rats revealed that, inducing fever by injecting rats with
yeast extract, followed by feeding these rats with 2, 4 or 8 g/kg of
the QURANI plants’ mixture have not any bad side effect on these
organs (Heart, Brain, Kidney, Liver, Lung, Spleen, Stomach and Colon).

Fig. 1: A photomicrograph of a section in heart of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 100)
Fig. 2: A photomicrograph of a section in brain of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 200)

Fig. 3: A photomicrograph of a section in kidney of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 400)
Fig. 4: A photomicrograph of a section in liver of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 200)
Fig. 5: A photomicrograph of a section in lung of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 100)

Fig. 6: A photomicrograph of a section in spleen of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 100)

Fig. 7: A photomicrograph of a section in stomach of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 200)

Fig. 8: A photomicrograph of a section in colon of rats fed with 8 g/kg of QURANI plants’ mixture showing their normal histopathological structures (Hx $ E x 100)

ACKNOWLEDGEMENT

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REFERENCES

1. The holy Quran.


