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RESEARCH PAPER

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Determination of the Yield of Ethanolic, Chloroformic Extracts and Saponins, Flavonoids Contents in *Fagonia cretica Linn*

Omer Abbas Mohamad Jahala and *Darien Omer Elmehina

Faculty of Medical Laboratory Science, Karary University, Sudan

***Immunology in Tropical Medicine (SUDAN ACADEMY OF SCIENCES) SAS, Private Medical Lab, Sudan**

ABSTRACT

To determine the yield of ethanolic, chloroformic extracts and saponins, flavonoids contents in fagonia cretica linn. Different me contents of thods were adopted in this study; the Harborne extraction method is one of them. Plant material collection, identification, extraction and fractionation:- Plant collection and Identification. The Fagonia cretica plants were collected from uncultivated and waste areas of Shendi town near the Faculty of medicine and health sciences, University of Shendi, Sudan during January-February (2011). Then the plant samples were authenticated by the Herbarium staff, Department of Botany, Sudan national centre for research, Khartoum, Sudan. A voucher specimen was deposited in there for future reference. The coarse powdered plant yield (3.5 %) chloroformic extract and (7) ethanolic one. The plant, also gave a total amount (W/W) percentage (12.2%) flavonoid and (25.6%) saponin, respectively. The coarse powdered plant yield (3.5 %) chloroformic extract and (7) ethanolic one

The plant, also gave a total amount (W/W) percentage (12.2%) flavonoid and (25.6%) saponin, respectively

Keywords: Fagonia cretica linn, Flavonoid, Saponin and Chloroform ethanol.

INTRODUCTION

Dependency and sustainability of man and animal life has been revolving around plants through the uses as foods, fibers and shelter, but also plants have been used to control and ease diseases, therefore the use of the plants as medicines is an ancient and reliable practice.

Fagonia cretica linn

Description of *Fagonia cretica L*

The plant is a small spiny under shrub, mostly found in dry calcareous rocks throughout Pakistan. It is reputed to be a medicinal plant in scientific and folkloric literature and its medicinal values are well documented (Khan et al., 2010).

Vern names: (Ar) Umm Showeika, Sholib, UmmShok.

Family: *Zygophyllaceae*.

Habitat: Sandy hills (Quos), low land plains.

In Sudan: ElM azroub, also widespread throughout Northern and central Sudan (Gamal et al., 1994). It is present abundantly in Shendi region.

Universally: It is found in India, Pakistan, China, Bangladesh and Egypt (Robson, 2003).

Most of the flavonol glycosides have been isolated from various Egyptian Fagonia species and their phylogenetic affinities have also been investigated (Crack, 2003). Several saponin glycosides have been separated and characterized (Taylor and Weber, 1994). Other constituents, such as docosyl docosanoate from hexane extract (Titz, 1969) and water soluble proteins from aqueous extract of air-dried *Fagonia cretica* plants, have been isolated (Pagila and Valentine, 1967) furthermore nahagenin (Green et al., 1982) (hederagnin, ursolic acid and pinitol from other Fagonia species have also been separated and characterized (Lowry et al., 1951) antimicrobial activity of its flavonoid compounds has been explored previously (Mitani et al., 1993) while the nutritive values of it and of other species growing wild in the Rajasthan region of India, have also been evaluated (Mitani,1993).

Several saponin glycosides have been separated and characterized

Other constituents, such as docosyl docosanoate from hexane extract and water soluble proteins from aqueous extract of air-dried *F. cretica* plants have been isolated. Furthermore nahagenin (hederagenin, ursolic acid and pinitol from other Fagonia species have also been separated and characterized

MATERIALS AND METHODS

Plant material collection, identification, extraction and fractionation

Plant collection and Identification

The *Fagonia cretica* plants were collected from uncultivated and waste areas of Shendi town near the Faculty of medicine and health sciences, University of Shendi, Sudan during January-February (2011). Then the plant samples were authenticated by the Herbarium staff, Department of Botany, Sudan national centre for research, Khartoum, Sudan.

A voucher specimen was deposited in there for future reference.

Extraction methods

Extraction was carried out according to the method described by Harborne (1984), 2000 g of plant sample was extracted successively with chloroform and (80 %) ethanol using shaker apparatus. For 72 hours for chloroform and 5 days for ethanol. The plant was washed with distilled water and allowed to dry completely before ethanolic extraction was carried out. Extraction was carried till the color of the solvent returned colorless. Solvents were

evaporated under reduced pressure using rotary evaporator apparatus. Finally extracts were allowed to dry completely under air (Sakamoto et al., 1991).

Methods of fractionation of the crude plant to flavonoid and saponin

To obtain a fraction containing flavonoids, 5 g of sample is weighed in at 250 ml volumetric flask. Then 100 ml of (80%) methanol was added at room temperature and shaken for 4 hrs in a shaker. The entire solution is passed through filter paper (No. 42). The process is again repeated. The filtrate is later transferred into a crucible and evaporated to dryness over a water path and weighed (Iqbal et al., 2011).

To obtain a fraction containing saponin, 5 g of sample was weighed. 100 ml of 20% C2H5OH was added. Then the suspension was heated over a hotplate for 4 hrs with continuous stirring at 55°C. The filtrate and the residue were re-extracted with another 100 ml of 20% C2H5OH. The combined extracts were reduced to 40 ml over water bath at 80°C. The concentrate was transferred into a 250 ml separatory funnel. 20 ml of diethyl ether was added and shaken vigorously. The aqueous layer is recovered, while the ether layer was discarded.

The purification process was repeated with a 30 ml of n-Butanol. Then the combined extracts were washed twice with 10 ml of 5% aqueous NaCl .The remaining solution was heated in a water bath. The sample was evaporated and dried in an oven. Finally the saponin content was calculated as percentage.

RESULTS

Extraction yield

The coarse powdered plant yield 3.5 % chloroformic extract and 7 ethanolic one. The plant, also gave a total amount (W/W) percentage 12.2% flavonoid and 25.6% saponin, respectively.

DISCUSSION

The extraction results revealed that the ethanolic yield was double the chloroformic one, which means that the polar components of the crude extract, was predominant over the non-polar ones, confirming the traditional methods of use that depends on the aqueous extract as preferable for public use. This is in line with (Chopra, R.M. et al, 1982) Saeed MA. Hamdard 1969) (Gamal, E.B. EL Ghazali et al 1994) (Shahina A. Ghazanfar, 1994) (Senthil Nagaraj, 2013,) - On the other hand the presence of saponin and flavonoids in these great amount (W/W) percentage 12.2% flavonoid and 25.6% saponin, respectively indicates the medicinal value of the plant.

CONCLUSION

The coarse powdered plant yield 3.5 % chloroformic extract and 7 ethanolic one. The plant, also gave a total amount (W/W) percentage 12.2% flavonoid and 25.6% saponin, respectively.

Recommendations

1. Further studies targeting the identification of the active medicinal component of the plant
2. Also studies targeting the formulation of the active ingredients

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Corresponding author: Darien Omer Elmehina, Immunology in Tropical Medicine (SUDAN ACADEMY OF SCIENCES) SAS, Private Medical Lab, Sudan
Email: mehina2007@yahoo.com