International Journal of Pharmaceutical Research and Applications
Volume 5, Issue 2, pp: 267-269 www.ijprajournal.com ISSN: 2249-7781

Phytochemical Screening of Crude Extracts of Aegle Marmelos

Sorabh Sehajpal*, Hayat M. Mukhtar.
Natural Product Research Laboratory, Department of Pharmacognosy,
S.B.S. College of Pharmacy, Chuslewal Morh, Patti (Tarn Taran) -143416

Date of Submission: 15-10-2020 Date of Acceptance:02-11-2020

ABSTRACT: Preliminary phytochemical screening of petroleum ether, benzene, chloroform, ethyl acecate and methanol extracts was done on Aegle marmelos (bark) which showed the presence of alkaloids, glycosides, proteins, phenols and carbohydrates. The above plant is a well known plant in sub-Himalayan tract at an altitude of 4000 feet, Central and S. India and Burma. (Bentley and Trimen, 2004). It is used in several parts of various states of India for various medicinal properties. The present work summarizes preliminary phytochemical study of the above plant.

KEYWORDS: Aegle Marmelos (stem bark), petroleum ether (40-60°), benzene, chloroform, ethyl acetate and methanol,

I. INTRODUCTION

Aegle marmelos Corr. (Rutaceae) is a small or medium sized deciduous tree armed with straight sharp axillary thorns, found in the sub-Himalayan tract at an altitude of 4000 feet, Central and S. India and Burma. The plant is credited in India with astringent, digestive, laxative, febrifuge and antidiabetic properties and is prescribed in diarrhea and dysentery.

The root is sweet, leaves are astringent, digestive, laxative and febrifuge and useful in ophthalmia, deafness and inflammations. The flowers allay thirst and useful in dysentery. The unripe fruit is oily, bitter, acrid, sour and tasty. The ripe fruit is acrid, bitter, sweet, appetizer, binding, tonic, febrifuge, hot, dry tonic, restorative, astringent, laxative, good for the heart and the brain.

A decoction of the root of Aegle marmelos is used for checking diarrhea and gastric irritability in infants. The roots, leaves and bark are prescribed as an antidote to snake venom (Kirtikar and Basu, 2004). The pulp of the ripe fruit is aromatic, cooling and laxative. The root bark is used in intermittent fevers and fish poison. (Chopra et al, 2006). Therefore, the present study was undertaken for the preliminary phytochemical investigation.

II. MATERIAL AND METHODS

Sample collection and preparation

The stem bark of Aegle marmelos Corr. (Rutaceae) was collected from Company Bagh, a garden in Amritsar (Punjab) in the month of August (2008). The plant was identified by the gardener of that garden and authenticated by the Taxonomist, Department of Botany, Guru Nanak Dev University (GNDU), Amritsar. A herbarium specimen (AM-01) of the plant was preserved in the Department of Pharmacognosy of our institute for further reference.

Chemicals

All the reagents used were of analytical grade obtained from S.D. fine chemicals Ltd. Mumbai, India.

EXTRACTION

The powdered bark of Aegle marmelos was washed with water, air dried at room temperature and then reduced to coarse powder. The dried powder (5gm) was subjected to soxhlet extraction with petroleum ether (40-60°), benzene, chloroform, ethyl acetate and methanol (in order of increasing polarity) for continuous hot extraction. The extracts were filtered and the filtrates were concentrated under reduced pressure which gave light brown in petroleum ether extract, brown in benzene extract, yellowish brown in chloroform extract, light brown in ethyl acetate extract and pale brown in methanol extract colored residues for the above plant. The petroleum ether extract, benzene extract, chloroform extract, ethyl acetate extract and methnolic extract was concentrated under vacuum at 40-60◦C yield a residue (0.04, 0.06, 0.07, 0.06 and 0.12% w/w), which was stored in a desiccator at room temperature.

Phytochemical analysis

Aegle marmelos showed the presence of alkaloids, glycosides, proteins, phenols and

International Journal of Pharmaceutical Research and Applications
Volume 5, Issue 2, pp: 267-269 www.ijprajournal.com ISSN: 2249-7781

carbohydrates. It was identified with the standard procedures. (Trease and Evans 1989 and Harbone J B 1993, Kokate C.K. 1991).

Ash And Extractive Values

(Trease EG Evans WC, 1997)

Ash values such as total ash, acid insoluble ash and water soluble ash for Aegle marmelos was 12.83, 5 and 5.66% respectively as given in table 4.

Phytochemical screening and behaviour of the powder bark of aegle marmelos

The phytochemical analysis of all the solvent extracts were analyzed with various chemical tests and then identified the phytoconstituents. The behavior of the powdered bark as such and with different chemical reagents and fluorescence characters were observed under visible light, short UV (254 nm) and long UV (366 nm). The results are tabulated in tables 1, 2, 3 and 4.

Table 1. Fluorescence analysis of powder of Aegle marmelos (Bark) with various chemical reagents.

Treatment of the drug powder	Observation Under		
	Ordinary Light	UV (254 nm)	UV (366 nm)
Drug powder as such	Yellowish Brown	Light yellow	Black
Conc. H_2SO_4	Grayish brown	Greenish Brown	Brownish Black
Conc. H_2SO_4 + H_2O	Orange Brown	Pale Green	Blackish Brown
Conc. Hcl	Light Brown	Brown	Black
Conc. Hcl + H_2O	Brown	Light Yellow	Black
Conc. HNO_3	Pale Yellow	Greenish Brown	Blackish Brown
Conc. HNO_3 + H_2O	Brownish Yellow	Yellow	Brown
Acetic Acid	Pale brown	Brown	Brownish Black
Methanol	Yellowish Brown	Light Green	Dark Brown
Ethanol	Light Brown	Greenish Brown	Black
Chloroform	Cream Yellow	Pale Yellow	Brownish Black
Petroleum Ether	Golden Brown	Brownish Green	Blackish Brown
Distilled H_2O	Yellow Brown	Greenish Yellow	Blackish Brown
10% NaoH	Pale Brown	Light Green	Light Black
5% Iodine	Yellowish Brown	Brownish Green	Black
Picric Acid	Greenish Yellow	Greenish Brown	Black
$Fecl_3$ solution	Greenish Yellow	Pale Green	Black
NH_3 solution	Light Brown	Greenish Brown	Blackish Brown

Table 2. Analysis of different solvent extracts of Aegle marmelos (Bark) under visible light, Short UV (254 nm) and Long UV (366 nm) light

Extract	Observation		
	Ordinary Light	UV (254 nm) Light	UV (366 nm) Light
Petroleum ether	Light Brown	Greenish Brown	Brownish Violet
Benzene	Brown	Light Green	Dark Green
chloroform	Yellowish Brown	Green	Black
Ethyl Acetate	Light Brown	Light Green	Black
Methanol	Pale Brown	Green	Yellowish Green

Table 3. Behavior analysis of powder bark of Aegle marmelos with various chemical reagents.

Treatment with chemicals	Observation
Conc. Hcl	Greenish brown

International Journal of Pharmaceutical Research and Applications
Volume 5, Issue 2, pp: 267-269 www.ijprajournal.com ISSN: 2249-7781

Conc. HNO_3	Brownish red
Conc. H_2SO_4	Black
Acetic acid	Pale yellow
Picric acid	yellow
Iodine solution 5%	Reddish black
5% NaoH	Brownish yellow

Table 4. Powder analysis for ash values.

Powder Analysis Parameters	
Total ash (%)	12.83%
Acid insoluble ash (%)	5%
Water soluble ash (%)	5.66%

III. RESULTS AND DISCUSSION

The phytochemical tests in different solvents of bark of Aegle marmelos indicated presence of alkaloids, glycosides, proteins, phenols and carbohydrates. The fluorescence characteristics of the powdered bark treated with various chemical reagents (Table 1) and the extracts (Table 2) have been reported. Similarly behavior of the powdered bark with various chemical reagents was also tabulated (Table 3).

Finally, in conclusion the present studies reveal that, the phytochemical studies of the Aegle marmelos is useful supplement information in regard to its identification of this plant. Further pharmacological activities are in progress.

REFERENCES

[1]. Anonymous, (2004), The Wealth of India, Raw Materials, CSIR, New Delhi, vol-1: A-Ci Pp, 26-27.
[2]. Chopra, R.N., Nayyar, S.L. and Chopra, I.C. (2006), Glossary of Indian Medicinal Plants, NISCAIR press, New Delhi, p 8.
[3]. Harborne, J.B. (1973), Phytochemical Methods, A Guide to Modern Techniques of Plant Analysis, Chapman and Hall, London, Pp.182-189.
[4]. Kirtikar, K.R. and Basu, B.D. (2004), Indian Medicinal Plants, Dehradun vol-1, 2nd Edn, Pp, 499-502.
[5]. Kokate, C.K., (1991), Practical Pharmacognosy, Vallabh Prakashan, New delhi, 3rd Edn, Pp.101-111.
[6]. Robert Bentley and Henry Trimen, Medicinal Plants, (2004), vol-1, p 55.
[7]. Trease, G.E. and Evans, W.C. (1985), Pharmacognosy, ELBS Publications, London, 15th Edn. Pp, 27, 479.
[8]. Tyler V.E., Brady L.R., Robber J.E. (1998) Pharmacognosy, Lea and Febiger Publications.