WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 6.805
Volume 5, Issue 12, 441-446. Research Article ISSN 2277– 7105

"ANTIOXIDANT ACTIVITY OF AEGLE MARMELOS LEAVES"

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Article Received on
16 Oct. 2016,

Revised on 06 Nov. 2016,
Accepted on 27 Nov. 2016

DOI:10.20959/wjpr201612-7085

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ABSTRACT

Herbal drug product has a special place in the world of pharmaceuticals. Aegle marmelos is an important medicinal plant of India. Aegle marmelos has been shown to possess multifarious medicinal properties such as antipyretic, antidiabetic, antioxidant, anticancer, antiviral, antifertility and healing activity. They provide abundant natural antioxidants which are virtually important for human health. It is used in traditional medicine for a variety of purpose, in treating gastrointestinal disorders. The great future potential of this plant has created a need for an antioxidant assay. Which can conform its anti-oxidant activity. The main objective of this research work to establish the antioxidants property of aegle marmelos leaf in water, ethanol, methanol solvents extracts. In the present study aegle marmelos leaf extracts on water, ethanol methanol solvents were subjected to antioxidant studies such as DPPH (1,1-diphenyl-2-picrylhydrazyl).

KEYWORDS: Aegle marmelos, Antioxidant, DPP.

INTRODUCTION

Aegle marmelos belonging to family Rutaceae. is highly reputed Ayurvedic medicinal tree commonly known as the Bael fruit tree in Hindi and golden apple in English. is medium sized tree growing throughout the decidus forest of India of altitude 1200 meter. Aegle marmelos have been used as food and for medicinal purposes for decades. Bael in indigenous system of medicine and has been regarded to possess various medicinal properties. Aegle marmelos is a holy tree found in Hindu Siva and Shakti temples as Sthala Virusha. The leaves are used for the Pooja and given as Prasad to the devotes. The aegle marmelos, is an indigenous of India and its leaves, roots, bark and fruit have been used for over 5000 years in the `Indian traditional system of medicine, the Ayurveda and in various folk medicine to treat various diseases. Even though all the parts of the plants are useful, leaves and fruits are mostly used

as important drug in the ancient system of medicine to cure almost all the common ailments of the human being. The leaves are used for the heart and brain disorders. Bael is a medium-sized, armed, deciduous tree from the family Rutaceae. This tree was originated in India and is presently growing in most of the countries of Southeast Asia. In India, it grows wild, especially in dry forest, outer Himalayas. Various crude extracts of this plan use as food additives or nutritional supplements has been established. The search for safe and effective naturally use as food additives or nutritional supplements has been established. The search for safe and effective naturally occurring antioxidants is now focused on use as food additives or nutritional supplements has been established. The search for safe and effective naturally occurring antioxidants is now focused on edible plants especially spices and herbs A large number of plants have been screened as viable sources of natural antioxidants. The leaves are used as astringent, laxative, febrifuge and expectorant. In order to find out potential sources of natural antioxidants the leaves of Aegle marmelos were studied for its DPPH.

MATERIALS AND METHODS

➢ Plant material Collection

Aegle marmelos belonging to family Rutaceae has been selected for antioxidant study. The plant materials were collected from G.B Pant university panthnagar.

➢ Sterilization of plant materials

The disease free and fresh plant were selected for this investigation. About 4 gm of fresh and healthy leaves were taken for each solvent extraction. These are washed with tap and distilled water for four times. Then, surface sterilized with 0.3% alcohol for few seconds. Then it washed with distilled water and then the leaves were dried under shade. This dried material was mechanically powdered and stored at a dry place. This powdered material was used for further antioxidant analysis.

➢ Preparation of the Extract

Collected leaves of A. marmelos were weighed prior to drying. 15 gm of accurately weighed powdered leaf of aegle marmelos was extracted with 150ml solvent (methanol, ethanol, water separately) for 8h in a mechanical shaker. The extracts were filtered filtrates were evaporated at 42°C under reduced pressure to dryness in a rotary evaporator. The extract obtained was weighed and stored in airtight container in refrigerator. In case of water extract, the sample was added to boiling water and extracted for 15 min and filtrate was freeze dried and store until further antioxidant screening purposes.

➢ **Antioxidant activity Reagents**

- DPPH
- ETHANOL
- METHANOL

Antioxidant activities 1, 1-Diphenyl-2-picrylhydrazyl DPPH is used for antioxidant assay. It was obtained from HiMedia Lab. Pvt. Ltd., India.

➢ **DPPH (1, 1-Diphenyl-2-picrylhydrazyl) Scavenging assay**

The DPPH assay method is based on the reduction of DPPH a stable free radical. The free radical DPPH with an odd electron gives a maximum absorption at 517 nm (purple color). The antioxidant activity of different aegle marmelos extracts were measured in term of hydrogen donating or radical scavenging ability using the stable DPPH method. The ability of extracts to scavenge DPPH radical is determined according to the method of Blois. 1ml of 0.1m DPPH solution was mixed with 3ml of extract (10, 100, 500) in methanol. The mixture was shaken vigorously and incubated for 35 minutes in the dark at room temperature. The absorbance was measured at 517 nm methanol and distilled water were used to get the absorbance zero. A blank sample containing the distilled water and DPPH was also prepared. all determinations were performed. The radical scavenging activities of the tasted samples expressed as percentage of inhibition were calculated according to the following equation.

Percentage of inhibition of DPPH activity= 1-(absorbance of the test sample / absorbance of control) × 100

RESULTS AND DISCUSSION

Aegle marmelos showed a good antioxidant activity in water, ethanol and methanol extracts. The model of scavenging the DPPH radical is widely used method to evaluate the free radical scavenging ability of different solvent extracts (ethanol, methanol and distilled water) on the DPPH radical which increase with increasing concentration. The scavenging effects on DPPH radical were determined. Measuring the decay in absorbance at 517 nm due to the DPPH radical reduction, indicating the *a*ntioxidant activity of the aegle marmelos in a short time. The antioxidant activity of different concentration (5,10,15 mg/mi) ethanol, methanol and distilled water of aegle marmelos was determined by DPPH method. In the present study the methanol of aegle marmelos is higher antioxidant activity. The scavenging effect on the ethanol extract from aegle marmelos were 58.62 in 5 mg /ml, 64.34 in 10mg/ml and 67.46 in

15mg/ml respectively. The scavenging effect on the methanol extract from aegle marmelos were 76.73% in 5mg/ml, 83.64% in 10mg/ml and 84.38% in 15mg/ml respectively. The scavenging activity was found to be lower in distilled extract 32.25% at 5mg/ml, 36.68% at 10mg/ml and 39.75% at 15mg/ml. among the three solvents methanol having higher antioxidant activity than the other two solvents. The aegle marmelos is rich in antioxidant, it can be used as food additives to delay the oxidative deterioration of foods and as nutraceutical in medicinal formulation against degenerative diseases. The antioxidant compounds are mainly derived from natural sources such as plants. The aegle marmelos can be used as a natural antioxidant, antibiotic, antipyretic and immune modulatory drug.

Table: 1 Antioxidant activity of aegle marmelos DPPH scavenging activity of A.M. in ethanol extract

Conc. of leaves extract (mg/ml)	%of inhibition Ethanol
5	58.62
10	64.34
5	67.46

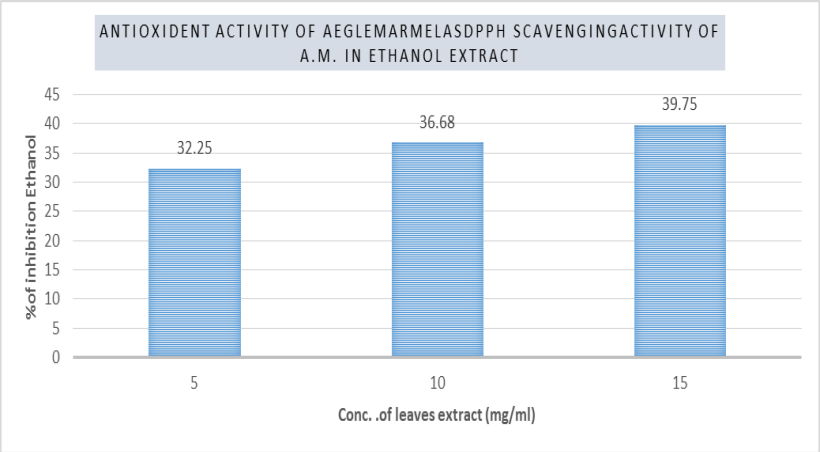


Table: 2 Antioxidant activity of aegle marmelos DPPH scavenging activity of A.M. in methanol extract

Conc. of leaves extract (mg/ml)	%of inhibition Methanol
5	76.73
10	83.64
5	84.38

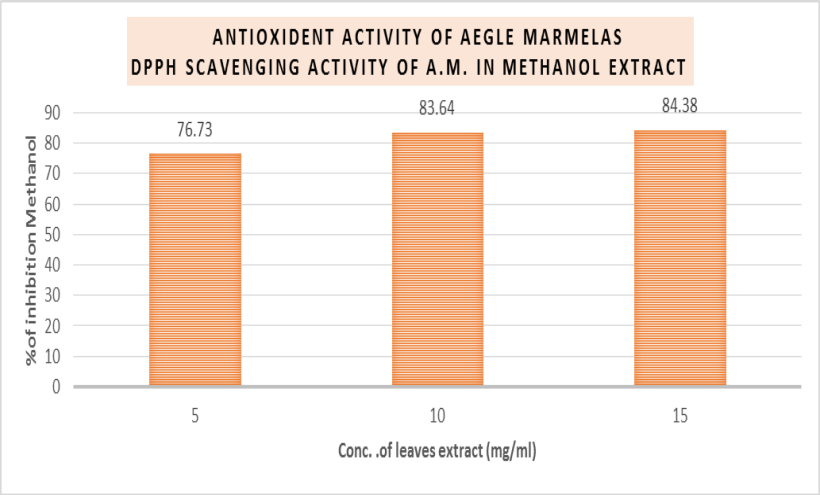
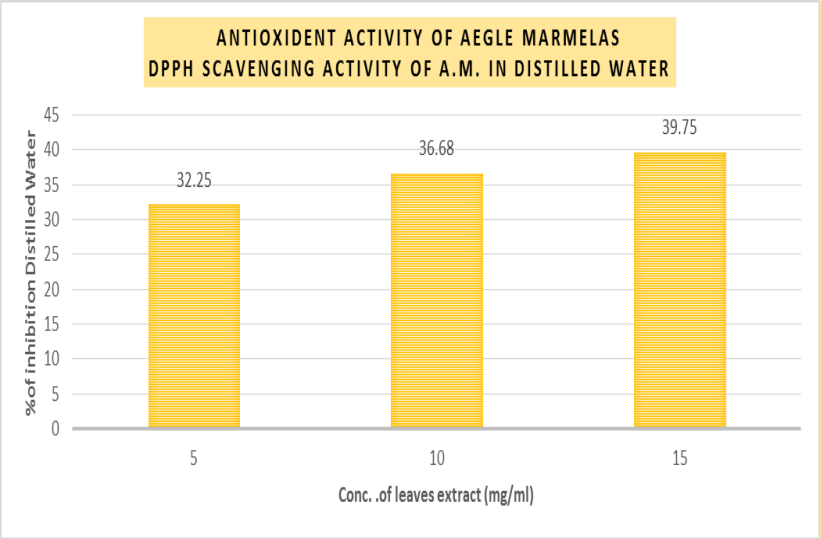


Table: 3 Antioxidant activity of aegle marmelos DPPH scavenging activity of A.M. in Distilled water

Conc. of leaves extract (mg/ml)	%of inhibition Distilled water
5	32.25
10	36.68
15	39.75



CONCLUSION

Aegle marmelos, commonly known as bael, is a spiny tree belonging to the family Rutaceae. The medical properties of this plant have been described in the Ayurveda also. In fact, as per Charka (1500 B.C) no drug has been longer or better known or appreciated by the inhabitants of India than the Aegle marmelos. In this study, Aegle marmelos recognized as having high levels of antioxidant activity. Leaf extract of Aegle marmelos showed higher scavenging property it may be due to the present of hydroxyl groups. In this study, Methanol having high

antioxidant activity than the other two solvents. It is quite evident that bael contains several important bioactive compounds. Antioxidant properties of several herbaceous plants depending of the solvent used for extraction. The herb selected for analysis are traditional plant with well- known therapeutic activity.

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