

A Review On: “Aegle Marmelos”

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ABSTRACT

Aegle Marmelos Corr. (Rutaceae) often known as Bael or Bengal Quince, is an Indian tree that has been cultivated since prehistoric times. The leaves, bark, roots, fruits and seed are widely utilized in Ayurveda. India's traditional medicine system, and in folk medicine to cure a variety of ailments. Various class of compound, such as alkaloid, essential oils, flavonoids, coumarins, terpenoids, fatty acid, Amino acid have been isolated from different Parts of Aegle Marmelos as a result of extensive investigation. This plant has the potential to treat diseases such as Diabetes, Cholesterol, peptic ulcer, diarrhoea, and dysentery as well as being Anti-cancer, Antioxidant, Antimalarial, Radioprotective, Antihyperlipidemic, Antibacterial, Antifungal, Antiviral activities. The morphology, Distribution, phytochemistry, and pharmacological activities of A. Marmelos are summarized in this plant study.

I. INTRODUCTION

Aegle Marmelos (Linn) correa also known as Bael or Bilva and belongs to the family Rutaceae, Family has been widely used in Indian traditional medicine system as a result of its numerous therapeutic characteristics.¹ The Bael tree is native to the Eastern and Central Ghat's of India. It is native to the Indian subcontinent and can be found primarily in tropical and subtropical climate. The tree can also be found as a wild tree in the lower Himalayan Mountains up to 500 meters in elevation. Bael grows in the Himalayan foothills, Uttaranchal, Jharkhand, Madhya Pradesh and the plateau Deccan as well as along the East coast.² Bael fruits is a deciduous, subtropical tree with globose, grey or yellowish hard woody fruit shell. There is a gentle yellow or white colour inside this mucilaginous pulp with an orange colored lot of seed. It features a large number of seeds that are densely covered in fibre hairs and encased in a thick sticky scented pulp.³ The Bael fruit is well known for its ability to relieve constipation.

Its therapeutic benefits are recorded in the ancient Sanskrit medical treatise Charaka Samhita.⁴ Bael Leaves, root, bark, seed, and fruits are all essential components of several traditional formulations of various ailments and several bioactive chemical.⁵ Alkaloid, terpenoids, steroids, tannin, glycoside, flavonoids phenolic compound are the most important component found in plants.⁶

1.1] Description^(7, 8, 9)

Aegle Marmelos is a slow growing, medium sized tree with a short trunk, thick, flaking bark and spiky branches that grows up to 12-15 meter tall. A clear, sticky fluid that resembles gum arabic pours from injured branches and hangs down in long threads before solidifying, it's sweet at first, but eventually it irritates the throat.

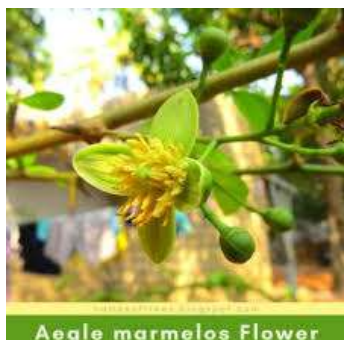
Leaves

The deciduous, alternate leaves are composed of 3 to 5 oval, pointy, shallowly toothed leaflets, 4-10 cm long, 2-5 cm wide, the terminal one with a long petiole, borne singly or in 2's or 3's. When mature leaves are injured, they exude an unpleasant odour.



Flower

Flowering takes place in April and May shortly after the new leaf emerges. Fragrant bloom with four recurved, fleshy petals, green outside, yellowish interior and 50 or more greenish yellow stamens appear in clusters of four to seven along the immature branchlets.



Fruit's

The Yellowish green fruits with small dot's on the outer surface, oblong to globose, 5.3cm to 7.2cm in diameter; weight 77.2g; volume 73.2ml. The pulp of dried fruits is yellow and mucilaginous, and it's preserves it's colour and integrity and 4 to 5mm thick, woody rind. The nutrient- dense Bael fruit is the highest source of riboflavin.



Seed

These are 10 to 15 flattened oblong seed in the pulp. The seed are about a centimeter long, with wolly hair's and a sack of sticky, translucent mucilage that solidifies on dried.



1.2] Scientific Classification ⁽¹⁰⁾

Botanical Name – Aegle Marmelos
Kingdom –Plantae
Order –sapindales
Family – Rutaceae
Subfamily – Aurantioideae
Genus – Aegle
Species –Aegle Marmelo's

Vancular Name⁽¹¹⁾

Hindi –Bel, Bela, Billi
English –Stone apple, Bael fruit, and Indianquince
Tamil –Aluvigam, Kuvilam, Mavilangi, vilwam
Telugu – Bilvamu, Maluramu, Maredu
Gujrat –Billi
Kannada – Bela
Orissa – Bela
Bengal – Bael, Bel
Sanskrit – Bilva

B] Phytochemical constituent and Different test :-^(12, 13, 14)

• Test for Alkaloid

In a separate test tube, weigh around 0.2 gramme of plant extract and heated with 2 percent Sulphuric acid for 2 minutes. It was then filtered into a separate test tube, with a few drops of Dragencloffs reagent added, and the presence of orange red precipitate checked for the presence of alkaloid.

• Keller-Killani Test:

In a separate test tube, weigh around 0.5 gm of plant extract with 2 ml glacial acetic acid and a drop of ferric chloride solution. 1 ml concentrated tetra oxo sulphate (VI) acid was used as a base layer. Also look for the creation of brown rings near the contact.

• Test for Terpenoids

Weigh about 0.5 g plant extract in separate test tubes with 2 ml of chloroform. And add concentrated Sulphuric acid carefully to form a layer. And observe for presence of reddish brown color interface to show positive results for the presence of terpenoids.

• Test for reducing sugars

Fill a test tube halfway with 2 mL crude plant extract and 5 mL distil water, then filter. For 2 minutes, the filtrate was heated with 3-4 drops of fehling's solution A and B. Look for orange-red precipitate, which means there are reducing sugars present.

• Test for Flavonoids

In separate test tubes, weigh roughly 0.2 gm plant extract, dissolve diluted Sodium hydroxide, and then add diluted Hydrochloride. Also keep an eye out for yellow solutions that have turned colourless. This shows that flavonoids are present.

• Test for Steroids

2 ml acetic anhydride and 0.5 gm ethanolic extract of each sample with 2 ml

Sulphuric acid to the plant extract In samples, look for a colour shift from violet to blue or green, which indicates the presence of steroids.

• **Test for Tannin**

A little amount of plant extract was combined with water and warmed in a water bath. The mixture was filtered, and the filtrate was treated with ferric chloride. Also, keep an eye out for dark green solutions, which suggest the presence of tannin.

C] Pharmacological activities and different Parts of Aegle Marmelo's:-

1] Antidiabetic activity_

Diabetes mellitus (DM) is the most common endocrine illness, affecting over 100 million individual (6 percent of the world's population). It is caused by a lack of or inadequate insulin synthesis by the pancreas, which causes in a rise or reduction in glucose concentration in the blood.¹⁵

2] Antihyperlipidemic activity_

An increased level of triglycerides, fatty acids, and cholesterol in the blood cause atherosclerosis, which can lead to ischemic heart disease, myocardial infarction, and cerebral vascular accidents.¹⁶

3] Antioxidant activity_

The formation of different reactive free radical and subsequent damage to macromolecules such as DNA, protein, and lipid is caused by oxidative stress, which is formed during normal metabolic processes in the body as well as provoked by a number of environmental and chemical variables.¹⁷

4] Anti-cancer activity_

The majority of effective anti-cancer treatment are costly, mutagenic and tetrogenic agents taken from natural sources (paclitaxel). As a result, efforts are being made to generate low cost, non-toxic medication from other sources.¹⁸

5] Radioprotective activity_

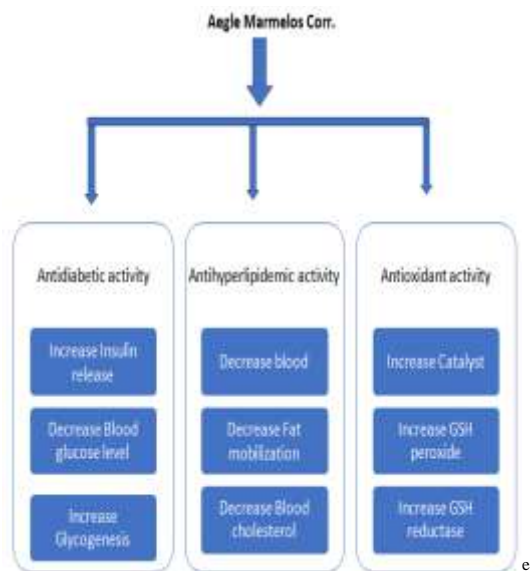
Radiotherapy has recently emerged as one of the most significant cancer treatment, particularly for patients suffering with crucial visceral tumours. This treatment, is regularly curing a big number of cancer patients all around the world. However, there are certain negative effects to radiation.¹⁹

6] Antiviral activity_

Viruses are the tiniest pathogens, with a living entity inside the host's body and a non-living insert form outside the host. This Causes a variety of seasonal outbreaks, including as conjunctivitis and influenza, and is resistant to most synthetic medicine. To solve these issues, it is critical to produce Antiviral medication from natural bio- resources.

7] Anticonvulsant activity_

The anticonvulsant effect of an ethanolic extract from Aegle Marmelos Leaves on maximum electroshock (MES) or pentylenetetrazole (PTZ) in rat this study looked at male mice. The leaves of this medicine plant, which belongs to the Rutaceae family, are commonly used to treat inflammation, asthma, hypoglycemia, febrifuge, hepatitis and Painkiller.²⁰



II. CONCLUSION

Traditional medicine is still commonly practiced for a variety of reasons. Rapid population growth, insufficient medicine supply, adverse effects from various allopathic pharmaceutical, and ever- increasing resistance to currently available drugs for disease have led to a growing emphasis on the utilization of plant material as a Source of human medicine. The extensive information on phytochemicals and diverse biological features of plant extracts offered in this review is firmly thought to provide detailed evidence for the use of this plant in various treatments. Aegle Marmelo's has now become an important source of medication for the treatment of a variety of human and animal ailments. As a result, Aegle Marmelos could be used as a source of beneficial phytochemical

components in the near future I, and it could play a significant role in modern medicine a medical system.

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