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MOST MEDICINAL FRUIT- BAEL

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ABSTRACT

The Indian traditional medical system, Ayurveda, and diverse forms of folk medicine make considerable use of leaves, bark, roots, fruits, and seeds to treat a wide range of illnesses. Bael fruits are edible, and the pulp is used to make puddings, juice, and murabba, among other treats. Bael fruits are also utilised in many traditional treatments as a laxative, to cure respiratory ailments, and to treat gastric ulcers, diarrhoea, and dysentery. Numerous traditional medical practices have been confirmed by scientific research, and accounts suggest that the fruit has a wide variety of therapeutic benefits, such as antioxidant, prevention of free radical production, and scavenging of free radicals.[1] India is the world's largest producer of medicinal herbs, making it the botanical garden of the globe. Since Charak (1500 B.C.), Bael (Aegle marmelos) has been recognised as one of India's most significant medicinal plants. Bael, or Aegle marmelos, is a medium-sized deciduous tree in the Rutaceae family. It is sometimes referred to as golden apple or Bengal quince. This tree's entire range of parts, including the stem, bark, root, leaves, and fruit at all phases of development, have long been utilised in traditional medicine due to its medicinal qualities. When the fruit is just starting to ripen, it has significant medicinal benefit. Ripe fruit has laxative, cooling, astringent, and fragrant properties. The unripe or partially ripe fruit has digestive, anti-scorbutic, and stomachic properties. ripe[2]. Aegle marmelos, a member of the Rutaceae family, is well-known in traditional medicine as Bael and has a number of therapeutic uses, most notably as a cooling agent. It is indigenous to India and can be found all over South Asia. Bael is one of the most underappreciated and neglected fruit crops used for medicinal purposes. It is thought to contain a storehouse of nutrients and remedies. A variety of medical conditions can be treated with the various portions of the bael tree, including asthma, anaemia, fractures, wound healing, swollen joints, high blood pressure, jaundice, diarrhoea, good mental state, and brain typhoid problems during pregnancy. Bael is well known for its pyretic, analgesic, and anticancer properties. It also relieves constipation. Numerous phytochemicals have been identified and isolated from diverse[3] Aegle marmelos (Linn.) Correa ex Roxb., or Bael, is a medium-sized tree of Indian origin that can reach an elevation of 1200 meters. This adaptable tree species contains a wide range of coumarins, alkaloids, sterols, and essential oils in its leaves, roots, seed, bark, and fruit, among other parts. With the use of various post-harvest technologies, the fruits are also used to prepare a wide range of byproducts, including candy, panjiri, toffee, jam, and so on. This helps to reduce post-harvest losses and therefore increases the shelf life, which further aids in value addition and in generating a good income for[4]

KEYWORDS: *Beal,traditional plant,medicinal value,aegle marmelos, underutilized tree.*

INTRODUCTION

The majority of the tree's components, including the fruit, blossoms, roots, bark, leaves, and stem, have health benefits at every stage of development (Maity, 2009). This medium-sized tree can be found growing throughout India's jungles at an elevation of 1,200 meters. It can be found across the sub-Himalayan forests of Bengal, central, and southern India. The fruit's peel is composed of a tougher shell that ranges in colour from green[5]Bael is beneficial for treating a wide range of illnesses because it includes a variety of phytochemicals, including polysaccharides, gums, resins, essential oils, tannins, and alkaloids. Its nutritional value is far greater than that of other fruits. It is quite significant for the ecosystem as well. Compared to other trees, it releases a higher percentage of oxygen, acting as a climatic cleaner. Many important medicinal uses exist for it, including antifungal, analgesic, anti-inflammatory, antipyretic, hypoglycemic, anti-lipidemic, immune-modulatory, wound-healing, anti-fertility, and insecticidal properties.[6] therapeutic potential and it is belong to family Rutaceae, it is known by outside of the country (Sharma et al. 2007). In India, the plant is widely cultivated particularly in Uttar Pradesh and Bihar.[7] Fruits are considered to be protective since they are high in minerals, vitamins, and phytochemicals. Fruits are a great source of soluble dietary fibre, which lowers blood fat and cholesterol levels and facilitates easy bowel movements. In general, fruits have much higher antioxidant levels than vegetables, pulses, and cereals. Antioxidant qualities aid in the body's elimination of free radicals, protecting against a variety of infectious and chronic illnesses. In many ways, underutilised fruits are just as significant as economically developed fruit harvests. The word "underutilised" crop has been described in a variety of ways in international literature; the majority of these definitions have placed emphasis on characteristics such as connections to the cultural history of the[8]

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Traditional Uses of Bael Fruit

Bark

Fig1[11]

Chemical Component

coumarin, xanthotoxol, imperatorin, aegeline, and marmeline.

Use:-used to treat jaundice, diarrhoea, small pox and asthma. The decoction of root and bark is used in the treatment of fever.

Fruit

Fig.2[12]

Chemical Component

carotenoids, phenolics, alkaloids, pectins, tannins, coumarins, flavonoids, and terpenoids,

Uses

Bael fruits are also used in the treatment of chronic diarrhea, dysentery, and peptic ulcers, as a laxative and to recuperate from respiratory affections in various folk medicines.

Leaf

Fig3[13]

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Chemical Component
coumarin, xanthotoxol, imperatorin, aegeline, and marmeline.

Uses
constipation, diarrhea, diabetes, and other conditions.

Flower

Fig4[14]

Chemical Component:-coumarin, xanthotoxol, imperatorin, aegeline, and marmeline.

Uses: Skin care,diarrhoea, diabetes, constipation.

Pollination and Fruiting Pattern
According to Singh et al. (2014h and 2018d), the stem is short, thick, soft, and has spreading, occasionally spiky branches with the bottom ones drooping. The bark is peeling. Additionally, it has been noted that the bael germplasm occasionally contains 4- 8 leaflets rather than trifoliate leaflets (Singh et al., 2015b, 2019e, 2019f). Singh et al. There is a significant variance in the quantity, size, form, and orientation of thorns in[9]

Fig5[15]Cauliflorus flowering and fruiting pattern in bael under semi-arid conditions

The kinds having a longer flowering period may serve as a long-term resource which allows the existence of a consistent population of (Singh pollinatorset al. 2008). Some flowers may have petals that open all at once, while others may have petals that open one at a time,

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taking 45 to 60 minutes to fully open. The anthers and floral organs shrink and turn brick red following dehiscence as time goes on, and the petals' openings in individual flowers might differ from flower to flower within the same genotype (Singh et al. 2018a).

Fig.6[16]Different pollinating agents of bael flowers genetic resources and varietal wealth.

Bael Used for Diarrhoea:

This study aimed to review Aegle marmelos's anti-diarrheal properties. The Unit of Siddha Medicine library at the University of Jaffna is where the Siddha literatures were found. For the analysis, information was gathered from books and the internet and tallied. The Rutaceae family includes the Beal Fruit Tree (Aegle marmelos), also known by the Tamil names Vilvam, Kuvilam, and Sinhala name Belli. Because of all of its therapeutic benefits, it is the most valued medicinal plant in the Siddha medical system. It's a deciduous tree, modest to medium in size. It has a globose fruit that is grey or yellowish in colour, alternating leaf arrangement, greenish white blooms, and a large number of seeds. found in Sri Lanka. Fruit (both ripe and unripe), leaves, the peel of ripe fruit, roots, bark, and flowers are all utilised.

Unripe fruit contains astringent, stomachic, digestive, and slightly constipating properties. Siddha claims that Aegle marmelos reduces Vatha, Pitha, and Kapha doshas and has an astringent, bitter taste. It is also spicy and potent. Diarrhoeal illnesses rank among the most prevalent infectious diseases in the world, accounting for 3.2% of all fatalities annually, or the equivalent of 1.8 million deaths worldwide. This review makes it very clear that Aegle marmelos is a significant medicinal herb that is widely utilised in traditional medicine, Siddha, Ayurveda, and Unani. Aegle marmelos has served a variety of ethnobotanical functions throughout history. Based on the facts gathered, it appears that Aegle marmelos possesses anti-diarrheal properties.[16]

Flavonoids, coumarins, and tannins are some of the compounds found in bael. These compounds help to minimise swelling (inflammation). This may aid in the treatment of diarrhoea, asthma, and other ailments. Additionally, several of these substances aid in lowering blood sugar.[17]

CONCLUSION

1. We may conclude that modern technology should be considered for the highest grade bael production. Improved cultivars, dense planting, drip irrigation, plant growth regulators, canopy and nutrient control, and high planting density are some of the

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main horticultural treatments that affect plant health, flowering, and yield. Fruit quality—specifically, fruit size, pulp colour, and aroma with the ideal minimum residue limit—should be the primary focus for the export market. Bael is a fruit crop that may be grown sustainably on small holdings because of its adaptability to a variety of topographies and agroclimatic conditions. Furthermore, it offers plenty of possibilities for nutritional.

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