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Conservation prospective of ethno-medicinally important *Aegle marmelos* (L.) Corrêa through *Sthalavriksha* (temple tree) worship in Tamil Nadu, India

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ABSTRACT

Gunasekaran M., Balasubramanian P., Vimalarani M., de Souza K.A.A., Roque F.O., Laps R.R. & Sundar S. 2024. Conservation prospective of ethno-medicinally important *Aegle marmelos* (L.) Corrêa through *Sthalavriksha* (temple tree) worship in Tamil Nadu, India. Geophytology 54(2): 265–268.

In Tamil Nadu, people follow several traditional practices with religious faiths. One such tradition is known as sthalavriksha (sthal: locality, vriksha: tree) associated with temples. *Aegle marmelos* is the most popular sthalavriksha which is worshipped in the temples. Very few studies have so far been conducted on medicinal uses of sthalavrikshas occurring in the temples of Tamil Nadu. A survey of 1,165 temples in Tamil Nadu revealed occurrence of 112 plant species and, in particular *Aegle marmelos* alone in 328 temples. *A. marmelos* is not only utilized for sacred reasons but also for ethno-medicinal purposes. Several ethno-medicinal uses of this plant were recorded. Based on ethno-medicinal values and local beliefs, *A. marmelos* is well protected in the temples of Tamil Nadu.

Keywords: Sthalavriksha, *Aegle marmelos,* ethno-medicine, Tamil Nadu, India.

INTRODUCTION

Aegle marmelos is a fruit bearing tree indigenous to dry forests of plains and foothills of central and southern India. It is known by several common names, e.g. Bel, Beli fruit, Bengal quince, Wood apple or Stone apple (Figure 1). In Tamil Nadu, it is known as '*Vilvam'*. It is a dry deciduous species but also withstands drought. As it possesses thorns on the twig and leaves and is bitter in taste, it is not browsed by herbivore

Figure 1. Fruiting twig of *Aegle marmelos* tree.

Figure 2. Devotees worshipping the Sthalavriksha *Aegle marmelos* at Thiruvortiyur Shiva Temple.

animals (Gunasekaran & Balasubramanian 2012). *A. marmelos* has a prominent position in the temples of Tamil Nadu, particularly as sthalavriksha. The Sanskrit term "Sthalavriksha" is referred to the tree (mostly single tree) of the locality (Sthal: place; Vriksha: tree) and is venerated by the devotees as holy as the presiding deity of the temple (Gunasekaran & Balasubramanian 2005). Most of the temple myths (*sthalapuranas*) and temple history (*sthalavaralaru*) stated that the prime deity was first unearthed or found under the tree. After construction of the temple, these plants were treated as sthalavriksha or temple tree (sacred plant). Hindu saints, especially in Shaivam, mention three prime entities to learn the antiquity of a temple or a place of worship, viz. *Moorthy* (Deity), *Sthalam* (Shrine) and *Theertham* (Sacred tank or water body associated with temple).

According to the Department of Hindu Religious and Charitable Endowment (HR & CE), Government of Tamil Nadu, there are 25,000 ancient temples existing in the state. Among them, Lord Shiva temples are in majority and Sthalavrikshas are integral part of the temple worship especially in Shaivam (Figure 2). This worship is still in practice in Tamil Nadu and the bordering states of Kerala, Karnataka, Andhra Pradesh and neighbouring Island nation of Sri Lanka. Shaivam, the major sect of the 'Modern Hinduism' in Tamil Nadu follows this practice as Sthalavriksha and this is mandatory in Shiva temples. In other sects, e.g. *Vaishnavam* (Vishnu worship), *Saktham* (Sakthi or *Kotravai* worship), Koumaram (Lord Muruga worship) and Ganapathiam (Ganapathy or Vinayaga worship), sthalavriksha worship is not rigidly followed. Sowram is another discipline where 'Sun' is the main deity, although Sun temples are fewer in number in Tamil Nadu. Srinivasan (1972) stated that sthalavriksha worship is mostly associated with Shaivam and Vaishnavam. Nedunchezhiyan (2005) mentioned that the sthalavriksha get the divine power from the deities, which are treated as equal to the God. Many medieval Tamil sacred hymns, Devaram and Thiviyaprabantham quote sthalavrikshas and associated deities. Very few studies have been carried out on sthalavrikshas and their medicinal uses in Tamil Nadu (Thirugnanam 1995, Amirthalingam 1998, Gunasekaran & Balasubramanian 2012).

The survey of temples for the present study was carried out in Tamil Nadu and Puducherry (between 8°05' and 13°35' north latitudes and 76°15' and 80°20' east longitudes), situated at the south-eastern tip of the Indian peninsula. The land area of Tamil Nadu is 1,30,060 km^2, occupying 4.08% of the total area of India. Altogether, 1,165 temples, distributed in 38 districts of Tamil Nadu and Puducherry, were surveyed.

MATERIAL AND METHODS

The present study aims to study ethno-medicinal uses of most popular sthalavriksha *Aegle marmelos* and its conservation through worship. Direct observations were made in addition to a separate questionnaire used to gather ethno-medicinal uses on *A. marmelos* in temples, particularly the user groups, e.g. Nattu Vaithiyar, priests, local devotees, women folk, etc. (Gunasekaran & Balasubramanian 2012).

RESULTS AND DISCUSSION

Of the 1,165 temples surveyed, sthalavrikshas were present in 822 (71%) temples. A total of 112 species of Sthalavriksha, belonging to 41 families, were recorded and all of them are angiosperms. Of these, 102 species are of dicotyledons, belonging to 78 genera and 38 families whereas ten species are of monocotyledons, representing 3 families. Among 112 plant species, *A. marmelos* alone is present in 328 temples, i.e. 40% of the all sthalavrikshas recorded during the survey conducted during 2002–2006.

The devotees and local traditional medical practitioners (Nattu Vaithiyar) use several sthalavriksha plants for treating various ailments. Normally, the priests and the 'Vaidiyas' prescribe medicines with devotion and devotees consume the medicines with great belief. Most of the sthalavrikshas are said to contain medicinal properties. *Aegle marmelos* is most utilized sthalavriksha followed by *Azadirachta indica, Ocimum tenuiflorum* and *Naringi crenulata* among them. Most of the devotees use sthalavriksha plants as a source of local medicine in their day-to-day life. It is also an important medicinal plant used in the traditional Indian medical systems such as Siddha and Ayurveda. Root and stem decoction are given orally for treating fever. Fruit pulp is used to cure diarrhoea and dysentery. The infused leaves are taken orally to cure peptic ulcer (Table 1).

Results of the present study reveal that the Bengal quince *Aegle marmelos*, recorded in 40% of the temples, is the most frequently occurring sthalavriksha species in the state. The devotees believe that *A. marmelos* is the important sacred plant as the three compound leaves resembles the three eyes of Lord Shiva. The offerings of Bengal quince leaves are mandatory for Lord Shiva worship especially at the time of Maha-Shivaratri (A ritual-worshipping Lord Shiva throughout night with *A. marmelos* leaves). Moreover, Shaivites use *A. marmelos* leaves in all the rituals and worships at temple and at home ceremonies. Hence the species is most preferable for poojas (worship). It is known as Shiva's favourite tree and it is not only grown in temple premises but also in gardens at home. As *A. marmelos* fruits are easily procurable, saplings are raised by the devotees and planted in newly constructed temples. This may be the possible reason why *A. marmelos* is found in maximum numbers of temples.

Table 1. Medicinal uses of *Aegle marmelos* recorded from temples of Tamil Nadu.

Sthalavriksha parts used	Disease treated
1. Fruit pulp with milk	Diarrhoea
2. Fruit pulp	Skin boils
3. Leaves soaked in water in a copper container and the extract consumed next morning	Diabetes, hypertension. Vilvadhilegium prepared by local Vaidyas
4. Leaves and fruits	Diabetes, skin disease by local Vaidyas
5. Leaves and fruits	Cold and cough
6. Leaf juice	Menstrual disorder in women
7. Leaves	Blood sugar reduction
8. Leaf juice and fruit paste	Cold, cough, chest diseases, knee pain, sprain
9. Fruits	Psoriasis (local Vaidyas)
10. Leaves with cumin seeds and pepper seeds special dish	Improvement in the health of newly born babies

In spite of the beliefs associated with *A. marmelos*, several studies referred many biochemical compositions found in the tree. Anon. (1948) referred several chemical compositions of *A. marmelos*, for instance dry seed (34.4%) contain oil, roots contain auraptene, marmin, umpbellliferone and lupeol. Leaves consist of

crude protein, fiber and several new alkaloids. It is also referred that the unripe fruit showed anti-viral activity against Ranikhet virus and intestinal parasites *Ascaris lumbricoides, Entamoeba histolytica* and *Girradia* sp. Ravikumar et al. (2000) referred *A. marmelos* as one of the most useful medicinal plant in south India. Gupta et al. (2011) referred many bioactive compounds of *A. marmelos*.

Dhankhar et al. (2011) stated that Skimmianine, Aeglin, Rutin, Y-sitosterol, β-sitosterol, Flavone, Lupeol, Cineol, Citral, Glycoside, O-isopenteny are found in *A. marmelos*. Rajendra et al. (2023) mentioned that phytoconstituents, i.e. marmenol, marmin, marmelosin, marmelide, psoralen, alloimperatorin, rutaretin, scopoletin, aegelin, marmelin, fagarine, anhydromarmelin, limonene, β-phellandrene are found in *A. marmelos*. Bhowmick et al. (2023) mentioned anti-cancer potential of *A. marmelos* and Sampath Kumar et al. (2023) stated anti-diabetic activities of *A. marmelos*.

CONCLUSION

People believe that the medicine produced from the temple tree has more healing power than the normal traditional medicine. Therefore, *A. marmelos* is found in greater number of temples and is most frequently utilized as medicinal tree in Tamil Nadu. Though *A. marmelos* plant is most exploiting medicinal plant in Tamil Nadu state, the sthalavriksha worshipping practice leads to its continuous planting in newly constructed temples. Hence, conservation of the plant in Tamil Nadu state is well established through sthalavriksha worship.

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REFERENCES

Amirthalingam M. 1998. Sacred trees of Tamil Nadu. C.P.R. Environmental Education Centre, Chennai: 75–86.

Anon. 1988–89. The wealth of India: A dictionary of Indian raw materials and industrial products (Industrial products – 1), Publication Directorate, New Delhi: 85–91.

Bhowmick M., Bhagat P., Ghosh R., Tiwari P. & Bhowmick P. 2023. Uncovering the anti-cancer potential of *Aegle marmelos*: A comprehensive overview Vol. 12, Issue 03: 3087–3096.

Dhankhar S., Ruhil S., Balhara M., Dhankhar S. & Chhilla A.K. 2011. *Aegle marmelos* (Linn.) Correa: A potential source of phytomedicine. Journal of Medicinal Plants Research 5(9): 1497–1507.

Gunasekaran M. & Balasubramanian P. 2005. Sthalavriksha worship - A tool in plant conservation in Tamil Nadu. National Strategy for Conservation of Sacred Groves. In: Kunhikannan C. & Gurudev Singh, Institute of Forest Genetics and Tree Breeding, Coimbatore: 163–166.

Gunasekaran M. & Balasubramanian P. 2012. Ethnomedicinal uses of Sthalavrikshas (temple trees) in Tamil Nadu, southern India. Ethnobotany Research and Applications 10: 253–267.

Gupta D., John P.P., Pankaj K., Kaushik R. & Yadav R. 2011. Pharmacological review of *Aegle marmelos* Corr. fruits. *International Journal of Pharmaceutical Sciences and Research* 2(8): 2031–2036.

Nedunchezhiyan V. 2005. Thamizhar Kanda Thavaraviyal, International Institute of Tamil Studies, Chennai, pp. 25.

Rajendra, Kumar K., Joshi A., Negi A. & Rajput V. 2023. Development and Characterization of Phytosomes containing *Aegle marmelos* (Bael). International Journal of Indigenous Herbs and Drugs 8(5): 48–52.

Ravikumar K., Ved D.K., Vijaya Sankar R. & Udayan P.S. 2000. 100 Red listed Medicinal plants of conservation concern in South India. Foundation for Revitalisation of Local Health Traditions, Bangalore: 41–44.

Srinivasan K.R. 1972. Temples of South India, National Book Trust, New Delhi, pp. 10.

Sampath Kumar C., Pandian P. & Madhukar A. 2023. Evaluation of Anti-diabetic Activity of Isolated Fractions of Aegle marmelos in Research Square: 1–14.

Thirugnanam S. 1995. Thirukoil marangalin Maruthuvapayangal, Selvi Pathipagam, Thiruchi: 1–2.