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Review Article

A Comprehensive Review of *Madakku Karisalai Thailam* Formulation in Siddha Pharmacopoeia

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A B S T R A C T

Siddha system is the traditional system of medicine treating people with plants, animals and mineral-based medicines which originates from Tamil Nadu. According to the Siddha system, medicines are classified into many forms like *kudineer, thylam, parpam, chenduram, choornam, ilagam*, and so on. The shelf life of these medicines varies from 3 hours to 500 years. The aim is to review and standardise the Siddha formulation *Madakku Karisalai Thailam* to strengthen the scientific facts in this formulation.*Madakku Karisalai Thailam* (MKT) is a medicine from authenticate Siddha literature of "*Marundhu sei iyyalum kalaium*". This formulation is an herbal formulation made purely with plants like *Eclipta prostrata (karisalai) (Syn.: Eclipta alba (L.*) and *Sesamum indicum* (sesame oil)). It is used to treat tuberculosis, cough, bronchial asthma and other respiratory illnesses. This article illustrates the taste, character, pharmacology, and medicinal benefits of each ingredient in MKT formulation and qualitative analysis of MKT.

Keywords: Siddha Medicine, *Madakku Karisalai Thailam, Eclipta prostrata*, Lung Diseases

Introduction

The Siddha system is the traditional method of treating people with plant, animal and mineral-based medicines. This system of medicine originates from Tamil Nadu. In the Siddha system of medicine, internal medicine is of 32 types and external medicine is of 32 types. "*Ennai*" is one of the types of internal medicine which is also known as "*Thailam*".[1] There are a huge number of *thailam* formulations available in Siddha literature which is indicated for internal and external purposes.

Madakku Karisalai Thailam (MKT) is a medicine from the authenticate Siddha literature of "*Marundhu sei iyyalum kalaium"*. The review of MKT, an herbal-basedformulation, gives evidence for its medicinal benefits as per Siddha literature. The herbal components in this formulation are *Eclipta prostrata* (karisalai) and *Sesamum indicum* (sesame oil). Both the ingredients are herbals. This medicine is indicated for tuberculosis, cough, bronchial asthma and respiratory illness.

The Trihumoral theory, or Mukkutram, is one of the primary principles that form the basis of the Siddha system. An individual's healthy well-being, free from illness or degeneration, is promoted by a perfect physiological ratio of the three humours: *Vazhi, Azhal*, and *Iyam*. Diseases are categorised based on the deranged *mukkutram*. The above-

mentioned diseases are mainly due to the predominance of *Ayam*.[2] This paper illustrates the taste, character and medicinal benefits of each component used in this formulation and their pharmacological activity.

Materials And Methods

Literature collected from

Siddha Literature of Marundhu Sei Iyalum Kalaium, Pg: No:146-147 by Dr Deva asirvatham samuvel MD(s)[3],Siddha Materia Medica (Medicinal Plants Division)[4], Taxonomy of angiosperms (Maruthuvathavaraviyal)[5] , pagudhi : 2, Gunapadam (Thathu – Jeevam)[1] and articles from google scholar, pubmed, researchgate. etc

Composition of MKT

- Whole plant juice of *karisalai (Eclipta prostrata)*
- Sesame oil - *Ell ennai (Sesamum indicum*)

Source of Raw Drugs

The National Institute of Siddha in Chennai verified the authenticity of the plant *E. prostrata*, which was gathered from Kanchipuram. Sesame oil was bought from a country store in Chennai. Oil was derived from sesame seeds using a cold-pressing technique.

Method of Preparation[3]

After taking the necessary amount of *E. prostrata*, it was ground into juice Figure 1 and Figure 2. The juice was extracted using a squeezing technique without the use of water. The juice's quantity was recorded. In a vessel, the juice was mixed with an equivalent amount of sesame oil. Following its addition, the mixture was brought to a simmer in a stove and continuously stirred until the water content of the oil was reduced, resulting in a thick oil consistency. The combination was filtered in this form, and the quantity was recorded. On the next day, the same quantity of freshly made *E. prostrata* juice was mixed with the previously prepared oil and brought to a boil. Once more, strain it to an oil-like consistency and record its quantity, this was done repeatedly.

The process of making MKT involves repeatedly adding fresh *karisalai* juice to the oil to concentrate it. The procedure is often carried out three to one hundred times. Here, the process was carried out three times, and after that, the *thailam* was collected and stored in an airtight glass container.

- **Indication:** Tuberculosis, cough, bronchial asthma and lung diseases
- **Dosage:** 3 ml two times a day (after food)
- **Duration of treatment:** 48 days
- **Reference:** Book of *Marundhusei iyyalum kalaium* Page. No:146 by Dr. Deva asirvatham samuvel[3]

Figure 1.*Karisalai (Eclipta prostrate)*

Figure 2.*Ell ennai (Sesamum indicum)*

Results

Table 1.Scientific & Selected Vernacular Names and Families of the Medicinal Ingredients

Botanical Name	Tamil Name	English Name	Sanskrit Name	Family
Eclipta prostrata	*Karisalai*	Trailing Eclipta, false daisy[6]	*Bhringaraj,Kesaranja*[6]	Asteraceae[7]
Sesamum indicum	*Tilam*	Gingeli oil plant, black sesame	*Tilam*	Pedaliaceae[8]

Table 2.Morphology, Part Used & Organoleptic Characteristics of the Herbal Components[4]

Botanical Name	Morphology	Part Used	Taste	Potency	Bio-Availability
Eclipta prostrata	Herb	Whole plant	Bitter	Hot	Pungent
Sesamum Indicum	Herb	Seed	Sweet	Hot	Sweet

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Table 3.Information about the Components of MKT

Ingredients	Action	Phytochemistry	Medicina Uses in Siddha
Eclipta prostrata	• Cholagogue • Tonic • Alternative • Purgative • Emetic	• Alkaloids, flavonoids, triterpenoids, stigmasterol, glucosides, demethylwedelolactone, dimethyl wedelolactone, and seven glycosides[7]	• Anaemia • Jaundice • Leprosy • Filariasis • Spleen Disorders[4]
Sesamum indicum	• Nutritive • Laxative • Demulcent • Emollient[4]	• Anthraquinones, emodin[9] • Lignans, polyphenols, sugars, phenols, vitamins, proteins[10]	• Coolant to eyes • Eye diseases • Ear diseases • Wound • Cough • Scabies • To strengthen body[4]

Table 4.Pharmacological Action of MKT

Ingredients	Pharmacological Action
Eclipta prostrata	• Antimicrobial • Analgesic • Anti-nociceptive • Anti-inflammatory • Hepatoprotective • Antiviral • Immunomodulatory activity • Anticancer • Antitumour[6]
Sesamum indicum	• Antioxidant • Antimicrobial • Anti-inflammatory • Antidiabetic • Anticancer • Anti-hyperlipidemic • Hepatoprotective • Vasorelaxant activities[11,12,13,14]

Mineral Elements

The plant of *Eclipta prostrata* contains the following minerals: Ag, Na, Mg, Al, K, Ca, Fe, Cr, Mn, Co, Ni, Cu, Zn, and Mg. Macronutrient quantities in leaves included Ca, P, Mg, K, Fe, and S, with their values being in the following ranges: 9.62–41.74, 1.00–8.630, 3.53–35.50, 12.04–56.28, 0.111–3.845 g/kg, and 1.124–5.843 mg/kg, respectively. Sesame plants include the mineral elements calcium, phosphorus, magnesium, potassium, and sodium.[7,15]

Discussion

In this drug review of MKT, part of the herb that is used, morphology, pharmacological actions, phytochemistry and indications were analysed. MKT contains 50% sesame oil and 50% whole plant extract of *Eclipta prostrata*. *Eclipta prostrata* comes under the Asteraceae family and *Sesamum indicum* comes under the Pedaliaceae family [Table No.1]. Both the ingredients are herbs and contain similar minerals like calcium, phosphorus, magnesium, potassium, and sodium.

The predominant presence of *Ayam* is the cause of every disease that is suggested for MKT. *Ayam* has a cold nature, which can be neutralised by heat. Because of this, these components can be used to negate the adverse consequences of *ayam* in diseases as they are hot in potency. According to pharmacological actions, the drug has cholagogue, tonic, alterative, purgative, emetic, hepato-tonic, stimulant, laxative, emmenagogue, galactagogue, and diuretic properties [Table no.3]. Mineral elements like calcium, magnesium and potassium are present in both ingredients. Based on the disease indications, the following results were found in the text and research papers.

Numerous investigations into the biological activities of extracts and compounds derived from *E. prostrata* have been conducted using both in vitro and in vivo models, owing to the broad spectrum of ethnomedicinal values and applications. A few of them are covered in further detail in the subsections that follow. The antioxidant effects of *E. prostrata* were evaluated in Charles River Sprague-Dawley rats. The extract at 50 mg/kg and 100 mg/kg doses significantly reduced the oxidative biomarkers such as serum lipid peroxide and serum hydroxyl radical levels. By using the agar-well diffusion and broth microdilution procedures, the antibacterial effects of the alkaloids from the leaves of Eclipta prostrata were further investigated against *E. coli, P. aeruginosa, Shigella boydii, S. aureus*, and *S. faecalis*. The sample's zone of inhibition varied between 9.8 and 16.5 mm at 500 µg/mL, and its minimum inhibitory concentration (MIC) ranged between 42 and 89 µg/mL. This

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was found to be similar to the ciprofloxacin positive control, which had a MIC range of 0.8 to 1.3 µg/mL.[7] *Eclipta prostrata* is used for treating jaundice, gastrointestinal problems, asthma, and other symptoms such as fever, hair loss and whitening of hair, spleen enlargement and wounds.[16,17] Some ethnic groups in South American countries use this in the treatment of snakebites.[18] It is used for its anti-ageing and rejuvenating properties.[19] According to research, the alcoholic extract of *E. prostrata* when administered orally and intraperitoneally to mice, does not exhibit any toxicity in rats or mice, and the minimum lethal dose is larger than 2.0 g/kg. Research indicates the anti-inflammatory efficacy of *E. prostrata* was examined in Wistar albino rats by oral administration of methanolic extract.

Sesame oil produced a significant antipyretic effect comparable to paracetamol. In a recent study, animal models showed analgesic, antipyretic, and anti-inflammatory effects from sesame oil given as a dietary supplement. According to research, sesame seed consumption increases plasma gamma-tocopherol and enhances vitamin E activity, which is reported to prevent cancer and heart diseases. The anti-cancer activity of sesame was proven by the presence of myristic acid which has cancer-preventive capability and is found in sesame seed ranging from 328 to 1,728 ppm. Common skin pathogens like *Staphylococcus* and *Streptococcus*, as well as common skin fungi like athlete's foot fungus, are naturally resistant to the antibacterial properties of sesame. It acts as a useful natural UV shield[8,20]. Sesame oil shows a reduction in high levels of cholesterol and inflammation, lowers the risk of atherosclerosis, and delays the attack of cardiovascular diseases[9] and the oil has been used in the treatment of various chronic diseases which include hepatitis, diabetes and migraine[11].

The ingredients of MKT have anti-inflammatory and antioxidant effects, immunomodulatory activity, antipyretic effect, antibacterial properties and anti-cancer activity. These results also emphasised the value of MKT's ancient Siddha medicine. These activities are needed in treating lung diseases.

Conclusion

Traditional medical systems have employed *E. prostrata* and *S. indicum* to treat a variety of illnesses. Existing pharmacological research on chemical content and organoleptic characters revealed extensive biological impacts of ingredients in MKT, offering fundamental evidence for traditional claims. As reviewed it is concluded that based on the scientific validation of various research and Siddha literature, both the ingredients, i.e., *Eclipta prostrata* and *Sesame indicum*, were matched with the indications of MKT which is mentioned in Siddha text.

Conflicts of Interest: None

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