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Review Article

A review on therapeutic potential of Karanthai Chooranam in traditional Tamil Siddha medicine

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Karanthai Chooranam is a classical polyherbal formulation widely used in the traditional Tamil Siddha system of medicine for the management of various chronic ailments. It comprises medicinal herbs such as *Sphaeranthus indicus*, *Clerodendrum serratum*, *Zingiber officinale*, *Piper nigrum*, *Piper longum*, *Dolomiaea costus*, *Psoralea corylifolia*, *Acorus calamus*, *Celastrus paniculatus*, *Terminalia chebula*, *Terminalia bellirica*, *Plumbago zeylanica*, *Nigella sativa*, and rock salt, each possessing significant pharmacological properties. This review summarizes the traditional Siddha uses, phytochemical constituents, and therapeutic potential of the formulation based on classical Siddha literature and published scientific studies. Available evidence suggests that Karanthai Chooranam exhibits antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, neuroprotective, immunomodulatory, digestive, and bronchodilatory activities, supporting its traditional use in the management of respiratory, gastrointestinal, skin, inflammatory, and metabolic disorders. Although the medicinal properties of the individual ingredients have been extensively reported, further pharmacological and clinical studies are required to validate the safety, efficacy, and therapeutic potential of Karanthai Chooranam as a complete formulation.

Keywords: *Karanthai Chooranam, Siddha medicine, polyherbal formulation, Sphaeranthus indicus, phytochemistry, pharmacological activities, traditional medicine*

Introduction

Medicinal The Siddha philosophy is the concept of the *Mukkuttram* (*Tridosha*) is represent the *Vatham*, *Pitham*, and *Kabham*. Based on this equilibrium responsible for psychological and metabolic processes human body. The balance of these functional principles determines an individual's health status, while their imbalance leads to disease. Diagnostic assessment in Siddha medicine employs holistic methods, including pulse diagnosis (Nadi), sensory examination, patient history and evaluation of environmental influences. They are playing a major role to identify the specific diseases. The Siddha Traditional and the Legacy of *Brahmamuni* Traditional medicine remains a Foundational component of global healthcare, particularly where indigenous practices have been refined through millennia of empirical observation and often India's oldest indigenous healing tradition. The Siddha medicinal system, emerging from Tamil Nadu, traces its foundations to the ancient Tamil civilization and closely integrated within Tamil cultural heritage. it proposes that health represents a state of harmonious equilibrium between the biological body, the mind and the external environment (Thas, 2008). The architecture of Siddha medicine is attributed to the eighteen *Siddhars* in the different periods of the Tamil

history, enlightened sages. They are focused to integrated alchemy, yoga and spirituality into a cohesive medical science. *Brahmamuni* also focused to work in this way. According to the *Brahmamuni* systematic approach to pharmacology and therapeutics offers a sophisticated roadmap for disease management, detoxification and *Kaya Kalpa* (rejuvenation) (Ramaswamy, 2006). *Brahmamuni*'s philosophy centers on humoral balance (*Mukkuttram*) and the necessity of purification (detoxification). The process of detoxification is described through the classical principles of sodhana (purification), suddhi (cleansing) and the removal of ama (toxic metabolic residue). These are documented in literature texts such as, Yugi Vaithiya Chintamani, Agathiyar Gunavagadam, Theraiyar Vaithiyam and Nanju Nool. The pharmacopeia involves complex herbo-mineral and metallic formulations potent through meticulous purification processes. Beyond intervention, a disciplined lifestyle and spiritual awareness are advocated in his teachings as the primary defenses against ailment. Despite his influence, academic scrutiny of *Brahmamuni's* specific insights remains sparse. This study seeks to bridge that gap by critically reviewing classical Siddha literature to preserve this heritage and evaluate its integration into contemporary clinical practice of the herbals shown in Table 1 and Figure 1. (Kanakavalli et al., 2014; Brahmamuni, 2014).

Table 1. Scientific names of herbs and the plant parts used in the polyherbal formulation

S. No	Herbal ingredient used in Chooranam	Parts used
1.	*Sphaeranthus indicus / Hygrophila auriculata*	Fruits
2.	*Clerodendrum serratum*	Roots
3.	*Zingiber officinale*	Dried rhizome
4.	*Piper nigrum*	Seeds
5.	*Piper longum*	Seeds
6.	*Dolomiaea costus*	Stem
7.	*Psoralea corylifolia*	Seeds
8.	*Acorus calamus*	Roots
9.	*Celastrus paniculatus*	Seeds
10.	*Terminalia chebula*	Fruits
11.	*Terminalia bellirica*	Fruits
12.	*Plumbago zeylanica*	Roots
13.	*Nigella sativa*	Seeds



Figure 1. Constituent Ingredients of Karanthai Chooranam

Classification of the herbs:

***Sphaeranthus indicus* (Karanthai)**

Sphaeranthus indicus commonly referred to as Gorakhmundi or the East Indian Globe Thistle and it is a widely recognized aromatic annual herb classified under the family Asteraceae. The plant has multiple branches are present, prostrate-to-spreading, also characterized by its globular, purple-hued inflorescences and stems bearing conspicuous wings with dentate margins. It attains a height of approximately 30–60 cm and is covered with glandular hairs, which contribute to its characteristic fragrance. it is taxonomically placed within the genus *Sphaeranthus* (Mishra et al., 2007). The plant geographical distribution across the tropical and subtropical regions, such as India, Sri Lanka, Bangladesh, Nepal, Myanmar, Thailand, and Cambodia, into Southern China (Yunnan), Western Australia and parts of Africa (Ambavane et

al., 2014). Previous studies show the secondary metabolites were reported to include alkaloids, amino acids, eudesmanolides, flavone glycosides, flavonoid C-glycosides, isoflavone glycosides, peptide alkaloids, sesquiterpene acids, sesquiterpenoids, sterol glycosides, sterols and sugars (Ramachandran, 2013). The plant decoctions are frequently prescribed for chronic cough, asthma, and bronchitis and the roots and seeds serve as potent anthelmintic activity and stomachics to treat indigestion and hernia. The juice of the plant is styptic and said to be useful in liver and gastric disorders It is highly valued for treating hepatobiliary disorders such as jaundice and splenomegaly and metabolic conditions like diabetes mellitus. The powdered leaves and flower pastes are applied topically for chronic skin diseases like psoriasis and leprosy. Furthermore, the plant is recognized as a nervine tonic, used in the management of epilepsy, hemicrania (migraine), and mental illness (Kumar & Singh, 2013).

***Clerodendrum serratum* (Siruthekku)**

The plant was recognized in traditional Indian medicine as Bharangi, *Clerodendrum serratum* is an important medicinal shrub that belongs to the Lamiaceae family. This woody, perennial species typically reaches a height of 1–2.5 meters and is characterized by its bluntly quadrangular stems and large, opposite or whorled, serrated leaves. The plant is particularly distinguished by its attractive, slightly fragrant flowers that bloom in cylindrical thyrsus, exhibiting shades ranging from pale blue to pinkish-white (Patel et al., 2014). The plant *C. serratum* exhibits a robust geographical presence across the South Asia, with a primary distribution spanning India, Sri Lanka, and Malaysia. In the Indian subcontinent, it is found extensively in the forest regions of the Western Ghats, the Kumaon hills of the lower Himalayas (ascending to 1500 meters), Bengal, and Bihar. Ecologically, it thrives in warm, temperate climates and is often found in moist deciduous forests and along riverbanks. Beyond Asia, its native range extends to parts of Madagascar, South Africa and Northern Australia (Vidya et al., 2007). The *C. serratum* has reported to contain more phytochemical constituents include sesquiterpenes, flavonoids (such as hispidulin and apigenin), saponins, and phenolic compounds like serratagenic acid and acteoside. In Ayurveda, it is hailed as Kasaghni (cough destroyer) and treating chronic respiratory ailments including bronchial asthma, bronchitis, and allergic rhinitis. Modern studies validate its role as a potent bronchodilator and mucolytic. The root extracts were exhibit important anti-rheumatic properties and used as a febrifuge (antipyretic) to manage malarial and intermittent fevers. The plant material utilized to digestive stimulant, treating dyspepsia and anorexia and leaf pastes are used for wound healing and treat skin conditions. recent research also highlights its potential hepatoprotective and anticancer activities (Bhujbal et al., 2009).

Rock Salt *(Induppu)*

Rock salt is a crystalline mineral constituted predominantly by sodium chloride (NaCl) and often retains a complex profile of approximately 84 trace elements. These impurities frequently impart characteristic hues to the crystals and ranging from the famous pink of Himalayan salt to shades of blue or grey. It forms a stable cubic lattice structure and it is essential for maintaining the osmotic pressure (Drake & Gunter, 2002). The rock salt known as *Saindhava Lavana* is regarded as the superior class of salt and it's had "cooling" potency (Sheeta Virya) and its ability to balance *Tridoshas*. It has used to a carminative and digestive stimulant, increasing the secretion of salivary and gastric juices. Through halotherapy, it functions as mucolytic agent, thinning mucus and relieving symptoms of asthma, bronchitis and sinusitis. Its electrolyte-rich the profile helps in cellular absorption and muscle function, making it effective for preventing muscle cramps. The salt used for antibacterial and anti-inflammatory properties facilitate wound healing and skin detoxification (Singh & Jaiswal, 2013). Halite is a primary evaporate mineral, typically formed through the evaporation of saline lake or seawater in enclosed sedimentary basins. Over geological epochs, these deposits can reach thicknesses of several hundred meters. Major global deposits are distributed across every continent. The Salt Range in Pakistan (home to the Khewra mine) is one of the world's most significant sources of high-purity pink rock salt (Warren, 2010).

***Zingiber officinale* (Sukku)**

The *Zingiber officinale* is commonly recognized as ginger and is also a perennial herbaceous plant that belongs to the family Zingiberaceae. Morphological characterization of the ginger is robust, horizontal and branched rhizomes and which are thick, tuberous and pale yellow internally with aromatic fragrance. The plant attains a height of approximately 90–120 cm. The plant has a lanceolate leaf and a spike-like inflorescence of yellowish-green flowers with purple-mottled lips (Ravindran & Babu, 2004). The phytochemical profile dominated by volatile oils such as sesquiterpenes like zingiberene and non-volatile like gingerols and shogaols. In Ayurveda texts it known as *Maha-aushadhi,* is potent antiemetic and used to treat morning sickness, chemotherapy-induced nausea and motion sickness. The plant reported as anti-Inflammatory and analgesic agent by inhibiting COX-1 and COX-2 pathways and also treat osteoarthritis, rheumatoid arthritis, muscular pain, cold, asthma and bronchitis. Furthermore, potential to the antidiabetic and hypolipidemic (Mashhadi et al., 2013). This species is native to South and Southeast Asia like Indo-Malayan region. India is the world's leading producer

contributing over 30% of global output. In India, major production centers are located in Kerala, Meghalaya and the North-Eastern states (Parthasarathy et al., 2012).

***Piper nigrum* (Milagu)**

The globally recognized "King of Spices" is a perennial woody climber belonging to the family Piperaceae. it is a trailing vine that can reach lengths of 10 meters and has alternate, leathery, heart-shaped leaves and pendulous flower spikes. The globose fruit known as a peppercorn and it turns from green to red upon ripening (Ahmad et al., 2012). It has reported to contain major bioactive compounds such as alkaloid piperine, flavonoids, phenolic compounds, and volatile oils like pinene and limonene. It exhibits potent to the carminative and digestive stimulant, increasing hydrochloric acid secretion. Traditionally, the seeds of the plant used to treat cough and cold in Tamil culture. The recent research reported that seeds exhibit the antioxidant, anti-inflammatory, antimicrobial, neuroprotective activities and potential anti-tumor activity (Meghwal & Goswami, 2013). *P. nigrum* is native to regions of tropical forests of the Western Ghats in South India, particularly the Malabar Coast of Kerala, Karnataka and Tamil Nadu. It is often grown in agroforestry systems alongside coffee and tea (Krishnamurthy et al., 2011).

***Piper longum* (Thippili)**

Piper longum is commonly recognized as Indian Long Pepper, is a slender and have a aromatic properties. The plant belongs to the family Piperaceae. Morphologically the its unique fruiting spikes have a cylindrical structure and are typically 2–5 cm in length. The plant features heart-shaped leaves and woody roots, known in Ayurveda as Pippalimula. It is a dioecious species, spikes being the primary source of the commercial spice and medicinal raw material (Manoj et al., 2004). The spikes reported to contain major bioactive compounds such as alkaloidal piperine and piperlongumine, essential oils, resins and lignans that contribute to its diverse pharmacological actions. It is used to treat chronic bronchitis, asthma, and tuberculosis. In Ayurveda, it is used in Pippali Vardhamana Rasayana, a specialized protocol for rejuvenating lung tissue and enhancing immunity (Zaveri et al., 2010). It is used to treat dyspepsia, flatulence, and splenic disorders (Atal & Bedi, 2010). The pharmacological potential has been reported to anticancer properties, hepatoprotective, anti-inflammatory and neuroprotective activities (Yadav et al., 2016). *P. longum* is native to the tropical and subtropical belts of South Asia. In India, particularly from the Central Himalayas to Assam, Mikir hills and the evergreen forests of the Western Ghats, beyond India, its distribution extends to Sri Lanka, Malaysia, Singapore, and Myanmar (Manoj et al., 2004).

***Dolomiaea costus* (Koshtam)**

Dolomiaea costus belongs to the family Asteraceae, which is widely known as *Saussurea costus* or *Saussurea lappa* and it is a robust perennial plant that reaches heights of 1–2 meters. The morphology of the plant is irregularly toothed leaves, dense clusters of dark purple flower heads and a lingering aromatic odour (Kuniyal et al., 2015). The pharmaceutical importance of *D. costus* is primarily based on the recognition of its rich sesquiterpene lactone, costunolide, dehydrocostus lactone, essential oils and alkaloidal sphaeranthine. In ancient Ayurveda literature show, it is a vital remedy for asthma, bronchitis, persistent cough, potent carminative and stomachic, used to treat dyspepsia, ulcers and cholera (Pandey et al., 2007). The root has reported have to anti-inflammatory and analgesic properties in managing rheumatism and arthritis. It is also used as a nervine tonic, treat skin diseases like leprosy and persistent wounds (Butola & Samant, 2010). Recent research has validated its hepatoprotective, antioxidant, and anti-cancer potential, antimicrobial and antiviral agent (Kim et al., 2011). It is indigenous to the high-altitude zones (2,500 to 4,000 meters) of Indian regions such as Jammu & Kashmir, Himachal Pradesh, Uttarakhand (Kanwal et al., 2020).

***Psoralea corylifolium* (Kaarkolarisi)**

Psoralea corylifolia generally known as Babchi or Bakuchi, is an aromatic which is belongs to the family Fabaceae. It is a fundamental component of pharmacopoeias in ancient medicine, particularly within Ayurveda. The plant typically grows to a height of 60–120 cm. Morphological characterization of the plant is erect, grooved stems and ovate leaves covered with conspicuous black glandular dots, flowers are pale purple or blue, arranged in dense axillary spikes and ne-seeded blackish-brown pods (Alam et al., 2018). *P. corylifolia* is a medicinally important species known for its bioactive constituent's furanocoumarins, psoralen, isopsoralen and meroterpene phenols such as bakuchiol (Chaudhuri & Bojanowski, 2014). Traditionally esteemed for its efficacy in leukoderma (vitiligo) and psoriasis. Bakuchiol, often regarded as a "natural retinol," has been increasingly emphasized in contemporary its anti-aging and anti-acne effects (Dhaliwal et al., 2019). The pharmacological activities are reported to include antimicrobial, antioxidant, and anti-inflammatory activities, osteoprotective potential, anticancer activity, which is traditionally used to treat asthma and used as a cardiac tonic (Khatune et al., 2004; Li et al., 2016). The plant native to the tropical and subtropical regions of India

and Sri Lanka, in Indian subcontinent, particularly in the semi-arid landscapes of Rajasthan, Punjab, and Uttar Pradesh (Alam et al., 2018).

***Acorus calamus* (Vasambu)**

Acorus calamus is a semi-aquatic and perennial aromatic herb belongs to the family Acoraceae. Morphological characteristics of the plant is many-branched cylindrical rhizomes, as well as release a warm, spicy and aromatic plant. The plant bears sword-shaped bright green leaves that may reach up to 1 meter in height. The bioactive potential of *A. calamus* is based on the major phytochemicals such as volatile essential oil, α-asarone, β-asarone, sesquiterpenes, and acoradin. In Ayurvedic tradition, it is regarded as a Medhya Rasayana and is used for its neuroprotective potential and improve memory, speech clarity, flatulence, dyspepsia, chronic diarrhea, asthma, bronchitis, and remedy for epilepsy, insomnia hysteria, carminative and antispasmodic. The pharmacological activity of antimicrobial, antioxidant, anti-inflammatory, and insecticidal properties. *Acorus calamus* is distribution across the Northern Hemisphere and native to Asia, particularly the Indian subcontinent and Central Asia. In India, it occurs abundantly from the Himalayan region to the southern peninsula (Jayaraman et al., 2010; Rajput et al., 2014; Patel & Goyal, 2012; Balakumbahan et al., 2010).

***Celastrus paniculatus* (Valuluvai)**

Celastrus paniculatus is a medicinal plant in the family Celastraceae, is a large, woody, deciduous climber and referred to as the Jyotishmati. The morphological characteristics of the yellow lenticellate branches, serrated ovate-oblong leaves, and terminal panicles of yellowish-green flowers that mature into globose capsules containing bright orange-red arils. These seeds are the primary source of Celastrus oil (Lekha et al., 2010). The therapeutic efficacy of *C. paniculatus* is based on the complex mixture of sesquiterpene, triterpenoids and fatty acids. The sesquiterpene complex mixture contains celapanin, celapanigine, and celapagine. In ayurveda, it is recognized as a premier Medhya Rasayana commonly known as nootropic agent. The seed oil is traditionally used to enhance memory, intellect, and concentration of the brine. The recent pharmacological studies have validated its neuroprotective effects and potential therapeutic agent for Alzheimer's disease and cognitive decline (Bhanumathy et al., 2010). It has reported the pharmacological activity of anti-inflammatory, antifungal activity, analgesic, antipyretic properties and treating rheumatism, gout, and leprosy (Harish et al., 2010). The *C. paniculatus* is distributed widely across tropical and subtropical regions of Asia and Oceania. It is indigenous to the Indian subcontinent, particularly in the Western and Eastern Ghats, and the sub-Himalayan, beyond India, its distribution extends to Sri Lanka, Myanmar, Thailand, Malaysia, Indonesia, Southern China, and Northern Australia (Lekha et al., 2010).

***Terminalia chebula* Retz. (Kadukkai)**

Terminalia chebula species is belonging to the family Combretaceae and widely distributed throughout the tropical and subtropical regions of South and Southeast Asia. It is native to India, Sri Lanka, Nepal, Myanmar, Thailand, and Southwestern China. it is popularly known as Haritaki or the "King of Medicines" in Tibet. The tree grows up to 30 meters and is identified by its oval leaves, dull white to yellow terminal flowers, and an ellipsoidal with five dry longitudinal ridges. The plant is a primary constituent of the famous ayurvedic formulation, Triphala (Bag et al., 2013). The phytochemical present in the high content of hydrolyzable tannins, chebulinic acid, chebulagic acid, corilagin, gallic acid, flavonoids and triterpenoids. It is primarily used as a potent laxative and prokinetic agent, facilitating bowel movements, improving digestion and treating chronic constipation, flatulence, and haemorrhoids (Bag et al., 2013). The Rasayana commonly known as rejuvenative used as an antioxidant, anti-inflammatory, antimicrobial properties, diabetes and to promote wound healing (Lee et al., 2005). The recent studies of the plant have reported its potential as an anticarcinogenic, hepatoprotective, cardioprotective agent and anti-infectives.

***Terminalia bellirica* (Thandrikaai)**

The *Terminalia bellirica* species is a member of the Combretaceae family and commonly known as Bibhitaki or Baheda. The plant grows up to 40 meters, with a buttressed trunk and broadly elliptic leaves clustered at branchlet tips. The tree bears small yellowish-green, foul-smelling flowers that develop into globose or ovoid grey drupes with a velvety surface and a hard, stony endocarp. It is one of the three key ingredients of the traditional polyherbal formulation Triphala (Saraswathi & Senthil, 2014). The medicinal value of *T. bellirica* is based on the secondary metabolites of gallic acid, ellagic acids, lignans, and flavonoids. In Ayurveda, it is highly regarded for its Kapha, used to treat bronchitis, asthma, chronic cough, digestive stimulant, laxative, and to treat dyspepsia and flatulence (Kaur et al., 2012). It shows the pharmacological activities of antioxidant, antimicrobial, hepatoprotective activities, and to treat leucoderma. The recent research has reported that the plant has been managing hyperuricemia (gout) by inhibiting xanthine oxidase, and its role in lowering blood glucose and lipid levels (Makihara et al., 2012). *T. bellirica* is indigenous to India, Sri Lanka, Nepal,

Bhutan, Bangladesh, Myanmar, Thailand, and Malaysia. In the Indian subcontinent, it is found throughout the plains and lower hills up to an altitude of 1200 meters.

***Plumbago zeylanica* (Kodiveli)**

The *Plumbago zeylanica* is commonly known as Chitrak belongs to the family Plumbaginaceae. Morphologically, features woody, spreading stems and ovate, smooth green leaves, and is distinguished by terminal elongated spikes of white flowers with a tubular corolla and a calyx covered in sticky glandular hairs (Singh & Singh, 2019). The *P. zeylanica* is primarily bioactive compounds to the presence of a naphthoquinone, droopingone, chitranone, and zeylanone (Pant et al., 2012). In Ayurveda, it is used to treat as a premier Deepana, Pachana, dyspepsia, piles and obesity (Manyam et al., 2011). The root bark shows the result of anti-inflammatory, analgesic properties, rheumatism, joint pain, anticancer potential, antifertility, hepatoprotective, neuroprotective agent, antimicrobial and antifungal activities (Poosarla et al., 2019; Jamal et al., 2014).

***Nigella sativa* (Karunjeeragam)**

The *Nigella sativa* is commonly known as Black Cumin, *Kalonji*, or Black Seed belongs to the family Ranunculaceae. It is a slender herb, 20–30 cm tall, with finely divided linear leaves and delicate solitary flowers ranging from white to pale blue and fruit have large, inflated capsule containing numerous tiny, matte-black, triquetrous seeds (Ahmad et al., 2013). The therapeutic potency of *N. sativa* is primarily based on the bioactive compounds of quinone, thymoquinone, thymohydroquinone, dithymoquinone, nigellicine and thymol (Dajani et al., 2016). It is widely used to treat bronchial asthma, bronchitis, and allergic rhinitis and it's have a pharmacological evidence of the anti-inflammatory, antioxidant, hepatoprotective, neuroprotective activities, anticancer agent, antihistaminic and bronchodilatory effects (Boskabady et al., 2007; Khan et al., 2011). *Nigella sativa* is indigenous to the region of Southern Europe, and Northern Africa. It is a major commercial crop in India, Pakistan, Egypt, Turkey**,** and Iran (Ahmad et al., 2013).

Conclusion

Karanthai Chooranam is a valuable polyherbal formulation in the traditional Tamil Siddha system of medicine, comprising medicinal plants with well-documented phytochemical constituents and diverse pharmacological activities. The collective therapeutic properties of its ingredients, including antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, neuroprotective, immunomodulatory, digestive, and bronchodilatory effects, support its traditional use in the management of respiratory, gastrointestinal, skin, inflammatory, and metabolic disorders. This review highlights the scientific evidence available for the individual herbal components and emphasizes the therapeutic potential of the formulation as a whole. However, comprehensive studies on the standardization, safety, efficacy, pharmacological mechanisms, and clinical effectiveness of Karanthai Chooranam remain limited. Therefore, further experimental and well-designed clinical investigations are essential to validate its therapeutic claims and facilitate its integration into evidence-based complementary healthcare.

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