

• Review

Ethnobotanics used in folk medicine of Tamil culture in Sri Lanka: a scientific review

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ABSTRACT

Tamil culture has recognized the potential use of plant herbs for prevention and treatment of different diseases. These folk remedies have been practiced by Sri Lankan Tamils even after modernization. This review focuses on frequently used medicinal plants among Sri Lankan Tamil communities, such as *Cuminum cyminum*, *Azadirachta indica*, *Coriandrum sativum*, *Sesamum indicum*, *Zingiber officinale*, *Trigonella foenum-graecum*, *Moringa oleifera*, *Plectranthus amboinicus*, *Allium sativum* and *Curcuma longa*, for their documented medicinal properties, which include antimicrobial, antioxidant, antitumor, anti-inflammatory, antihypertensive, hypocholesterolemic, antidiabetic and diuretic effects.

Keywords: ethnobotany; medicinal plants; folk medicine; traditional medicine; Tamil culture; remedies

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1 Introduction

Plants have served as a novel weapon against different human ailments for several thousand years.^[1] Herbal remedies are considered to be the oldest forms of health care known to mankind.^[2] In addition to flavoring food, herbs and spices are also known for their preservative and medicinal value, and their use has formed one of the oldest sciences. Because of concerns about the side effects of conventional medicine, the use of natural products as an alternative to conventional treatment of various diseases has been on the rise in the last few decades.^[3] More than three quarters of the world population still rely on plants and plant extracts for health care.^[4,5] Many communities have developed special knowledge and skills in the use of medicinal

plants to treat a wide range of diseases.^[6] These traditional systems of medicine that have evolved over the centuries are still maintained as a great heritage.^[2]

The diversity in flora provides a rich source of medicinal plants, which has long been utilized by Anatolian cultures and accounts for the accumulation of remarkable medicinal folk knowledge in Turkey.^[7] The Indian traditional system of medicine is also heavily based on observations and experience gathered over a long period of time, thus a vast number of plants are used by different ethnic communities throughout India.^[8] It is documented that the Kani Tribal people, from the Tirunelveli hills of Western Ghats, India, possess an indigenous knowledge of the utilization of medicinal plants for first aid remedies and for common ailments.^[9] Traditional knowledge has been described

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as a cumulative body of knowledge, practice and belief, evolving through adaptive processes and handed down through generations by cultural transmission, which remains within the families.^[1,2,10] This wealth of knowledge has been passed orally from generation to generation and written documentation of these traditions does not exist.^[1,2]

Karunamoorthi et al.^[5] stated ‘according to the books like, *History of Creation* and *Pre Degree of Man* written by Hackal, the submerged Tamil land was the first place occupied by mankind who were well civilized.’^[5] The variety and quality of classical Tamil literature has led to its being described as ‘one of the great classical traditions.’ Sidha medicine is the oldest traditional treatment system derived from Dravidian culture and it flourished in the period of the Indus Valley Civilization (2600–1900 before the Common Era). Perhaps, it is the first recorded medical system in the world.^[5]

Folk medicine is still widely used among the Tamil community as it relies on locally available plant species and plant-based products and capitalizes on traditional wisdom-repository of knowledge.^[2] There is no published literature that preserves the indigenous knowledge of the use of medicinal plants within the

Tamil community in Sri Lanka. If this tradition is not preserved, it will be lost forever. Therefore, this review documents some common herbal products derived from plants used by Tamil communities to treat diseases within the folk medicine tradition of Sri Lanka. We also provide a comprehensive summary of the scientific literature on the medicinal properties of the selected herbs.

2 Search methodology

Plants were selected from the information provided by traditional healers from the Tamil community of Ilavalai, Jaffna, Sri Lanka. The data were gathered by interviewing 12 traditional healers (8 males, 4 females) between the ages of 40 and 90 years, who retain traditional knowledge of medicinal plants. The total number of plants discussed in the interviews was 38; only 10 commonly used herbs were selected for this review, as they were commonly used by all of the traditional healers interviewed.

According to the data provided, plants, the relevant part/parts and the form of the product used for treatments (e.g., decoction, powder, juice, or any other product) are shown in the following table.

Table 1 Different parts and relevant products of selected plants used for treatments

Plant	Relevant part	Form of the product used (e.g., decoction, powder, juice, or any other product)
<i>Sesamum indicum</i>	Seeds	Oil
<i>Plectranthus amboinicus</i>	Leaves	Juice
<i>Zingiber officinale</i>	Rhizome	Juice and powder
<i>Allium sativum</i>	Cloves	Crushed cloves
<i>Trigonella foenum-graecum</i>	Seeds	Whole seeds, water extract of the seeds
<i>Moringa oleifera</i>	Leaves, root, bark, flowers and fruits	Water extract of leaves/root/bark, a mixture of flowers and leaves in a form of sambol
<i>Cuminum cyminum</i>	Seeds	Whole seeds, powder of seeds
<i>Azadirachta indica</i>	Leaves	Juice of leaves, paste from leaves
<i>Curcuma longa</i>	Rhizome	Powder and paste from rhizome
<i>Coriandrum sativum</i>	Seeds and leaves	Powder of seeds and juice from leaves

3 Plants used in folk medicine

3.1 *Sesamum indicum* (Family: Pedaliaceae; Tamil name: Ellu; English name: Sesame)

3.1.1 Chemical constituents

Sesame seeds are used to produce oil.^[11] Sesame oil has been found to contain considerable amount of sesame lignans: sesamin, episesamin and sesamol.^[12] Sesame oil also contains vitamin E, polyunsaturated fatty acids, and monounsaturated fatty acids.^[11,12] Sesame is rich in sulfur containing amino acids and is an excellent source of copper and calcium.^[11]

3.1.2 Pharmacological properties

Sesame oil is widely used within the Tamil community to heal different ailments. It is widely used for gynecological problems, such as amenorrhea, and as a treatment for eye irritation.^[13,14] Sesamin, a lignin present, is responsible for the antioxidative and antihypertensive properties of sesame.^[11,12] It increases the recycling of vitamin E, improves liver functions and provides protection against alcohol-induced oxidative stress. Sesamin decreases cholesterol levels while increasing high-density lipoprotein (HDL) levels, and it is believed that sesame prevents hypertension.^[11] Sesame is a potent anti-inflammatory and antimicrobial agent.^[11,12] Wound-healing activity of sesame seeds and oil has been shown in rats by Kiran et al.^[15], who concluded that sesame increased the wound-healing activity by inhibiting lipid peroxidation. In Bangladesh, sesame oil is used for the treatment of burns associated with infection, pain and blisters.^[16]

3.2 *Plectranthus amboinicus* (Family: Lamiaceae; Tamil name: Katpooravalli; English name: Country borage)

3.2.1 Chemical constituents

Studies of the bioactive compounds in country borage by gas chromatography and mass spectrum analysis yielded various chemical compounds, such as 3-methyl-4-isopropyl phenol, squalene, caryophyllene and phytol, which are present in the plant leaves.^[17] The preliminary phytochemical analysis showed that other chemical compounds like alkaloids, carbohydrates, glycosides, proteins, amino acids, flavonoids, quinine, tannins, phenolic compounds and monoterpenoid compounds, such as carvacrol and camphor, are present in the plant.^[18,19]

3.2.2 Pharmacological properties

In Tamil traditional medicine, leaves of the plant are mainly used in the treatment of common illnesses such as cough, stomachache, headache, fever, skin infection, inflammation, asthma and urinary conditions. It is also a remedy for nervous disorders, congestive heart failure, hypertension and indigestion.^[19,20] Many studies have proven the antimicrobial and antioxidant properties of this

plant.^[18-20] Among other pharmacological properties, it is evident that the plant contains urolithiasis, antiepileptic, antitumor, antimutagenic, neuropharmacological, radioprotective, diuretic, antipyretic, analgesic and antifungal properties.^[17] Erny Sabrina et al.^[19] concluded that the presence of carvacrol and camphor could contribute to the antimicrobial activity. According to the studies conducted by Patel et al.^[18], the antioxidant activity of the plant is due to the presence of flavonoids and tannins.

3.3 *Zingiber officinale* (Family: Zingiberaceae; Tamil name: Inji; English name: Ginger)

3.3.1 Chemical constituents

The major chemical components of ginger are sesquiterpenes (bisabolene, zingiberene, and zingiberol). It also contains volatile oils such as zingerone, shogaols and gingerols. Smaller amounts of other sesquiterpenoids (β -sesquiphellandrene, bisabolene and farnesene) and a small monoterpenoid fraction (β -phellandrene, cineol and citral) have also been identified.^[4,21,22]

3.3.2 Pharmacological properties

Ginger is a food spice which is also widely used in Tamil folk medicine remedies. It is mainly used to reduce vomiting and nausea during pregnancy and to cure stomach disorders, including indigestion.^[22,23] In a placebo trial, Vutyavanich et al.^[24] found that nausea and vomiting were reduced with the use of ginger during pregnancy. It has been recorded that ginger possesses anti-inflammatory, antioxidant, antiulcer, antilipid, antidiabetic, analgesic, antipyretic and antitumor activities.^[4,21] Hasan et al.^[4] showed that the antimicrobial potency of ginger is mainly from the presence of oxygenated mono-terpenoids, sesquiterpenes and phenolic compounds (shogaol, gingerol). An experimental study on rats found that the 6-gingerol causes the antiulcer activity.^[21] It was also demonstrated that 6-gingerol supports antiemetic activity by enhancing gastrointestinal transport.^[21,23] Mashhadi et al.^[22] reported that shogaol from ginger exhibited antioxidant properties by significantly lowering lipid peroxidation and raising the levels of antioxidant enzymes, together with serum glutathione in animal models. Further they reported that the anti-inflammatory response, shown by gingerol, shogaol and other structurally related substances in ginger, inhibits prostaglandin and leukotriene biosynthesis through suppression of 5-lipoxygenase or prostaglandin synthetase.^[22] Ginger is used to treat coughs, as well as gastric and stomach pain in Bangladesh and the Philippines.^[16,25]

3.4 *Allium sativum* (Family: Alliaceae; Tamil name: Ulli/Vellaipodu; English name: Garlic)

3.4.1 Chemical constituents

Garlic is unique in chemical composition, due to the presence of sulfur-containing compounds.^[26,27] The most abundant sulfur-containing compound in garlic is alliin



which enhances the activity of the immune system.^[27] Other important sulfur-containing compounds present in garlic include allyl methyl thiosulfonate, 1-propenyl allylthiosulfonate and γ -L-glutamyl-S-alkyl-L-cysteine.^[28,29] One of the most biologically active compounds in garlic is allicin which is an antioxidant.^[28,30]

3.4.2 Pharmacological properties

The beneficial effects of garlic consumption in treating a wide variety of human diseases and disorders have been known for centuries; thus, garlic is a versatile medicinal plant in the folklore of many cultures.^[30] In folk medicine, garlic is used in diseases related to the gastro-intestinal tract as well as cardiovascular diseases. It is also known in the treatment of cold, asthma, arthritis, toothache, chronic cough, constipation, parasitic infestation, gynecologic diseases and infectious diseases.^[26,29] Many studies have shown that the hypotensive properties of garlic are related to hydrogen sulfide production and the release of allicin by the action of alliinase on alliin, which is assumed to possess angiotensin II inhibiting activity and vasodilating effects.^[27,29] In Turkey, garlic is used to treat hypertension.^[7] Allicin present in garlic acts as an antibacterial agent through sulfhydryl-modifying activity and therefore is effective against infectious diseases.^[28,30]

3.5 *Trigonella foenum-graecum* (Family: Leguminosae, Tamil name: Vendhayam, English name: Fenugreek seed)

3.5.1 Chemical constituents

The seeds of fenugreek contain lysine and L-tryptophan-rich proteins, mucilaginous fiber and other rare chemical constituents, such as saponins, coumarin, fenugreekine, nicotinic acid, saponins, phytyc acid, scopoletin and trigonelline, which are thought to account for many of its presumed therapeutic effects.^[31]

3.5.2 Pharmacological properties

It is mainly used among Tamils to treat digestive disorders, digestive tract ulcers, menstrual disorders and body heat. Body heat, also known as heat stress, is a common health problem caused by exposure to high temperatures. It occurs when the body is not able to cool itself enough. It is widely used in the treatment of diabetes and hypercholesterolemia.^[13,31,32] It is also used as a galactagogue, diuretic, antioxidant and antimicrobial agent.^[31] Mahmood et al.^[32] showed the antiulcer and gastro-protective effects of fenugreek seeds in a study done on rats. This study concluded that fenugreek seeds are a potent protector of gastric mucosa against ulcerogenic actions. The mechanism of this effect is due to the antisecretory activity of the seeds. The study concluded that fenugreek seeds exert their antiulcer activity through flavonoids, since flavonoids are reported to protect the

gastric mucosa by preventing the formation of lesions by various necrotic agents.^[32] Xue et al.^[33] studied the ability of fenugreek seeds to lower serum cholesterol levels. The hypocholesterolemic activity is due to saponins that increase biliary cholesterol excretion, which leads to lower serum cholesterol levels.^[34] This research further investigated the hypoglycemic effects of fenugreek and reported that fenugreek-treated diabetic rats showed significant reduction in fasting blood glucose and glycated hemoglobin levels compared to diabetic rats. This study suggested that the hypoglycemic effect was due to 4-hydroxyisoleucine, an amino acid present in fenugreek seeds, which increased glucose-induced insulin release from pancreatic β -cells.^[33]

3.6 *Moringa oleifera* (Family: Moringaceae; Tamil name: Murungai; English name: Drumstick/Moringa)

3.6.1 Chemical constituents

The main constituents of moringa plant are deic acid; palmitic acid; stearic acid; saponins; glycoside; gum; proteins; vitamins A, B₁, B₂, B₃ and C; minerals such as calcium, iron, phosphorus and magnesium; flavonoids; anthocyanins and two alkaloids moringine and moringinine.^[35,36] Antioxidant activity is shown by flavonoid groups such as quercetin and kaempferol.^[37]

3.6.2 Pharmacological properties

It is a highly valued plant, as all of its parts are edible and possess nutritional and medicinal properties.^[38] In Tamil culture it is believed that moringa enhances the synthesis of sexual hormones and enhances ejaculation in males. The plant is used to treat rheumatism, stomach complaints and hemorrhoids.^[13,35] Leaves, root, bark and flowers are used to cure gastric ulcers, conjunctivitis, tuberculosis, bronchitis, asthma, dysentery, jaundice, inflammation, venom bites, diabetes and fatigue and to increase milk production.^[35,37] Alkaloids present in the water extract of moringa leaves have been found to produce a negative inotropic effect on the isolated perfused frog heart. This finding supported the putative hypotensive property of moringa. Antimicrobial activity is shown by 4-benzyl-isothiocyanate present in seeds, which has been shown to act against several bacteria and fungi.^[37] Cajuday et al.^[38] revealed that the novel derivatives of moringa, thiocarbamates and nitriles, stimulate insulin release in animals, accounting its antidiabetic properties. Zade et al.^[39] explained that the administration of aqueous seed extract of moringa has a positive effect on spermatogenesis, and administration of hexane extract of leaves increased the weight of the reproductive organs in male rats. Further the study reported that this effect was due to the presence of flavonoids.^[39] Flavonoids are well known antioxidants, which ameliorate the oxidative stress-related testicular impairments in animal tissues. This lends support to traditional use of moringa to increase sexual

function.^[38,39]

3.7 *Cuminum cyminum* (Family: Apiaceae; Tamil name: Seeragam; English name: Cumin)

3.7.1 Chemical constituents

The chemical components of cumin, includes cumin aldehyde, cuminic alcohol, γ -terpinene, p-cymene, β -pinene and safranal.^[40,41] Analysis of mineral and vitamin composition revealed that the seeds contain ascorbic acid, niacin, copper and manganese.^[42]

3.7.2 Pharmacological properties

Cumin is a spice widely used as a pain reliever and digestive stimulant within the Tamil community.^[43] The seed is also used in the treatment of dyspepsia, diarrhea and jaundice.^[42] It possesses antihyperglycemic, hypolipidemic, antioxidant, antimicrobial, diuretic, carminative and antispasmodic activities.^[43,44] A study by Allahghadri et al.^[41] confirmed that cumin seeds exhibit hypoglycemic effects in type 2 diabetes. Dhandapani et al.^[44] revealed that the possible mechanism of hypoglycemic action relies on potentiating the insulin effect by increasing the pancreatic secretion of insulin. The hypocholesterolemic effect of cumin on diabetics has been shown by many studies. These studies concluded that the hypocholesterolemic effect could also be due to saponins present in cumin seeds, which prevent cholesterol absorption, interfere with its enterohepatic circulation and increase its fecal excretion.^[42,44] Bettaieb et al.^[40] and Allahghadri et al.^[41] stated that phenols and flavonoids in cumin are known to inhibit lipid peroxidation by quenching lipid peroxy radicals, and reducing or chelating iron in the lipoxygenase enzyme, thus preventing the initiation of the lipid peroxidation reaction and acting as potent antioxidants. Allahghadri et al.^[41] also demonstrated that *Escherichia coli*, *Staphylococcus aureus* and *Streptococcus faecalis* were sensitive to various dilutions of cumin oil, supporting the antimicrobial activity of cumin. In India, cumin seeds are used as a pain reliever.^[13]

3.8 *Azadirachta indica* (Family: Meliaceae; Tamil name: Vembu; English name: Neem)

3.8.1 Chemical constituents

Nimbidins are the most bioactive compounds found in neem extract. Other compounds present include arenimbolide, gedunin, azadirachtin, nimbin, gallic acid and polysaccharides.^[45,46] The compounds nimbolide, margolone and mahmoodin, present in neem, have antibacterial properties. Neem also contains meliacin, salanin, valassin, flavonoids, coumarin and tannins.^[45]

3.8.2 Pharmacological properties

All the parts of this plant are used in Tamil traditional medicine for household remedies against various human ailments.^[47] In folk medicine it is used to cure allergy, skin diseases, snake bite and stomach disorders. Further it is

also used to treat constipation, indigestion, eye diseases, and respiratory tract disorders. Neem is believed to cure malaria and jaundice.^[45,46,48] Nimbidin is responsible for the hypoglycaemic effect, antiulcer effect, antifungal activity, antipyretic activity and anti-inflammatory activity of Neem.^[45,46] Koshla et al.^[49] revealed that the hypoglycaemic action of neem is partly due to increased extra pancreatic activity, i.e., by increased peripheral glucose utilization or by direct metabolic effect on tissues particularly on liver. Many studies have shown the antibacterial activity of neem. Rajasekaran et al.^[47] and Joshi et al.^[50] found that the neem extracts had antibacterial activity against both gram-positive and gram-negative bacterial species that were tested. In another study, crude neem extract functioned as an antiviral agent by adsorbing viruses, and blocking their entry into uninfected cells.^[46] Nimbolide and gedunin were reported to have antimalarial properties.^[45] Anyaehie,^[48] in a recent study, revealed that extraction of neem leaves by using acetone: water (1:1 ratio) acted against *Plasmodium falciparum*, the parasite that causes malaria.

3.9 *Curcuma longa* (Family: Zingiberaceae; Tamil name: Manjal; English name: Turmeric)

3.9.1 Chemical constituents

The active constituents of turmeric are the flavonoid curcumin (diferuloylmethane), demethoxy curcumin, bisdemethoxy curcumin, sugars, proteins and resins.^[51-53] Other constituents include various volatile oils, including tumerone, atlantone and zingiberone.^[52,54]

3.9.2 Pharmacological properties

In folk medicine it has been used to treat skin wounds, blistering diseases, such as pemphigus and herpes zoster, for parasitic skin infections and for acne. It is taken orally to treat common cold, liver diseases, urinary tract diseases, ulcerative conditions, biliary disorders, anorexia, cough, rheumatism and sinusitis; it is also taken as a blood purifier. For chronic rhinitis and coryza, it is administered by inhalation.^[51,53,55] Curcumin has antioxidant, anti-inflammatory, antiviral and antifungal actions. Laboratory studies have identified a number of pharmacological molecules involved in inflammation that are inhibited by curcumin, including phospholipase, lipoxygenase, cyclooxygenase 2, leukotrienes, thromboxane, prostaglandins, nitric oxide, collagenase, elastase, hyaluronidase, monocyte chemoattractant protein-1 (MCP-1), interferon-inducible protein, tumor necrosis factor (TNF) and interleukin-12 (IL-12).^[51,54] Rafatullah et al.^[55] showed that oral administration of an ethanol extract of turmeric produced significant antiulcer, antisecretory and cyto-protective effects in rats. They further stated that turmeric extract increased gastric wall mucus significantly and restored the non-protein sulfhydryl (NP-SH) content in the glandular stomachs of the rats.^[55] Araújo et



al.^[53] showed that curcumin is a potent antioxidant and inhibits lipid peroxidation by maintaining the activities of antioxidant enzymes, superoxide dismutase, catalase and glutathione peroxidase at higher levels. The presence of a diene-ketone system provides a lipophilicity to the compounds, and thus probably enhances membrane penetration, which is associated with the anti-inflammatory activity of turmeric.^[53] Also, many studies have shown antimicrobial, anticancer and antihepatotoxic actions of turmeric.^[53,54]

3.10 Coriandrum sativum (Family: Apiaceae; Tamil name: Kothamalli; English name: Coriander)

3.10.1 Chemical constituents

The seeds of *C. sativum* contain 0.5%–1.0% essential oil and are rich in beneficial phytonutrients, including carvone, geraniol, limonene, borneol, camphor, elemol, linalool, flavonoids and phenolic acids.^[3,56] Coriander's flavonoids include quercetin, kaempferol, rhamnetin and epigenin. It also contains active phenolic acid compounds, including caffeic and chlorogenic acid.^[3] Other constituents are petroselinic acid, linoleic acid, oleic acid and palmitic acid.^[57]

3.10.2 Pharmacological properties

All parts of this herb are used as flavoring agents and/or as traditional remedies for the treatment of different disorders in the folk medicine^[56]. Traditionally coriander is used as cooling, diuretic, stomachic, antioxidant, antimicrobial, antidiabetic, antispasmodic, and anti-inflammatory agent. Seeds are used in the preparation of many household medicines to cure common cold, seasonal fever, nausea and stomach disorders.^[3,56,57] Coriander is rich in iron, which directly helps curing anemia. It aids in proper secretion of hormones and thereby induces proper menstrual cycles and reduces menstrual pain.^[57] Waheed et al.^[58] reported that the aqueous extract of coriander increased 2-deoxyglucose transport, glucose oxidation and incorporation of glucose into glycogen, evoked a stepwise stimulation of insulin secretion from a clonal B-cell line and acted as hypoglycaemic agent. Dhanapakiam et al.^[59] found a significant decrease in cholesterol in animals fed with coriander. They concluded that the increased activity of plasma lecithin: cholesterol acyltransferase, and enhanced degradation of cholesterol to fecal bile acids and neutral sterols appeared to account for the hypocholesterolemic effect of coriander. Bhat et al.^[56] stated that coriander had protective action on gastric mucosal membranes due to free radical scavenging activity, or the formation of protective layer. Phenolic compounds are responsible for the strong antioxidant activity of coriander leaves.^[56,57] In India, coriander is used as carminative, stomachic and antispasmodic and to treat gastrointestinal complaints.^[8]

4 Discussion

Herbal medicines are assumed to be of great importance in the primary healthcare of individuals and communities in many developing countries, as the herbal medicines are relatively safer than synthetic drugs.^[13] The use of plants for the treatment of many diseases is associated with folk medicine from different parts of the world.^[53] Most of these medicinal plants are used as spices in cooking within the Tamil community as well as in remedies that cure many different ailments. Even after modernization, the Tamil community continues to use these plants extensively as a source of drugs for the treatment of these diseases. The antimicrobial, antioxidant, antitumor, anti-inflammatory, antihypertensive, hypocholesterolemic, antidiabetic and diuretic properties of various plants have been identified.

All the plants discussed in this review are used to treat digestive tract disorders. *Sesamum indicum*, *Plectranthus amboinicus*, *Zingiber officinale*, *Moringa oleifera*, *Cuminum cyminum*, *Curcuma longa* and *Coriandrum sativum* exhibit antioxidant properties due to the presence of flavonoids. *S.indicum*, *C.cyminum*, *C.sativum* and *Trigonella foenum-graecum* showed hypocholesterolemic effects, and *T.foenum-graecum*, *C.cyminum*, *C.sativum* and *Azadirachta indica* showed hypoglycaemic effects. According to the literature these effects are due to various chemical compounds present in the plants. Even the antitumor effects of plants such as *Z. officinale*, *C. longa* and *P.amboinicus* have been identified in previous studies. Many studies have been conducted to investigate the chemical composition of these plants. This help to identify the compounds which are responsible for the biological activities of the plants and to validate their therapeutic applications. The mechanisms behind each medicinal property also have been studied. Many studies are done on animal models to evaluate the therapeutic potentials of these plants, and these studies have shown the medicinal properties of these plants. Comparatively few studies have used human models to evaluate the effect of these plant extracts in the treatment of different diseases.

5 Conclusion

Plants have been used by the Tamil population to treat diseases from ancient times. This article provides the scientific background for the beliefs on traditional folk medicines among Tamil community in Sri Lanka.

6 Competing interests

The authors declare that they have no competing interests.

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