



**ORIGINAL RESEARCH PAPER**

**Rheumatology**

**MEDICINAL ACTIVITY OF KEELVAYU NIVARANA CHURNAM - A REVIEW.**

**KEY WORDS:** Arthritis, Inflammation, *Keelvayu Nivarana Churnam*, *Alpinia Officinarum*, *Hermidesmus Indicus*, *Smilax China*, *Withania Somnifera*.

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**ABSTRACT**

The World Health Organization has emphasized that without the active participation of traditional medicine the goal of "Health for all by 21st century" cannot be achieved. The Siddha system of Medicine is a pioneering ancient medical system originated from Tamil speaking areas. Arthritis means inflammation of joints. It has observed a 20:1 ratio in female versus male patients. Siddhar Yugi munivar has classified Vatha diseases into 80 types in Yugi Vaithya Chinthamani 800. 'Keel Vaayu' is one among them. Most of the symptoms present in Arthritis can be correlated to that Keel Vaayu. *Keelvayu nivarana churnam* is the one of the drug for the Most of the symptoms present in Arthritis can be correlated to that Keel Vaayu. The aim of this review is collect the medicinal activity of the ingredients of *Keelvayu nivarana churnam* are *Alpinia officinarum*, *Hermidesmus indicus*, *Smilax china* and *Withania somnifera*.

**Introduction:**

Inflammation is the physiological response to tissue damage and is accompanied by a characteristic series of local changes. Its purpose is protective: to isolate, inactivate and remove both the causative agent and damaged tissue so that healing can take place. The causes of inflammation: microbes (e.g. bacteria, viruses, protozoa, fungi), physical agents (e.g. heat, cold, mechanical injury, ultraviolet and ionizing radiation), chemical agents (Organic, e.g. microbial toxins and organic poisons; Inorganic, e.g. acids, alkalis), antigen that simulate immunological response.

Inflammation is divided into acute and chronic patterns. Acute inflammation is of relatively short duration, lasting for minutes, several hours, or a few days, and its main characteristics are the exudation of fluid and plasma proteins (edema) and the emigration of leucocytes, predominantly neutrophils. Chronic inflammation, on the other hand, is of longer duration and is associated histologically with the presence of lymphocytes and macrophages and with the proliferation of blood vessels and connective tissue.

**Acute inflammation:**

The cardinal signs of acute inflammation are: redness, heat, pain, swelling, loss of function. The changes that take place in the tissue are active hyperemia, exudation, and migration of leukocytes. The effects of acute inflammation are phagocytosis, immune response, toxin dilution and fibrin formation, tissue swelling, pain and systemic effects. Acute inflammation has three major components: (1) alteration in vascular caliber that lead to an increased blood flow, (2) structural changes in the microvasculature that permits the plasma proteins and leukocytes to leave the circulation, and (3) emigration of the leukocytes from the microcirculation and their accumulation in the focus of injury.

The chemical mediators have two origins. (1) Cells: histamine, serotonin, lysosomal enzymes, prostaglandins, leukotrienes, platelet activating factor, cytokines, nitric oxide. (2) Plasma: C3a, C5a, C5b-9, kinine system (bradykinin), coagulation/fibrinolysis system.

In inflammation the following mediators responsible for (1) vasodilation – prostaglandins, nitric oxide, (2) increased vascular permeability – vasoactive amines, C3a and C5a, bradykinin, leukotrienes C<sub>4</sub>, D<sub>4</sub>, E<sub>4</sub>, PAF. (3) chemotaxis, leukocyte activation – C5a, leukotriene B<sub>4</sub>, bacterial products, cytokines (IL-8), (4) fever – IL-1, IL-6, TNF, prostaglandins, (5) pain – prostaglandins, bradykinin, (6) tissue damage – neutrophil and macrophage lysosomal enzymes, oxygen metabolites, nitric oxide.

The outcome of acute inflammation is (1) resolution, (2) healing by connective tissue replacement (fibrosis), (3) abscess formation (suppuration), (4) progression of the tissue response to chronic inflammation.

The events in the resolution of inflammation: (1) return to normal vasculature, (2) drainage of edema fluid and proteins into lymphatic's or (3) by pinocytosis into macrophages, (4) phagocytosis of neutrophils, (5) necrotic debris by macrophages, and (6) disposal of macrophages.

**Chronic inflammation:**

In chronic inflammation the processes involved are very similar to those of acute inflammation. Chronic inflammation is considered to be inflammation of prolonged duration (weeks, months) in which active inflammation, tissue destruction, and attempts at healing proceeding simultaneously. There is destruction of considerably more tissue. More fibrous tissue formed. Chronic inflammation may either be a complication of acute inflammation or a primary condition of slow onset. While it may follow acute inflammation, as described earlier, chronic inflammation frequently begins insidiously, as a low-grade, smoldering, often asymptomatic response. Indeed, this latter type of chronic inflammation includes some of the most common and disabling of human diseases, such as rheumatoid arthritis, atherosclerosis, tuberculosis, and the chronic lung diseases.

Chronic inflammation arises under the following settings: (1) Persistent infections by certain microorganisms and certain fungi. (2) prolonged exposure to potentially toxic agents, either exogenous or endogenous. (3) Autoimmune disease.

Chronic inflammation is characterized by (1) infiltration with mononuclear cells, which include macrophages, lymphocytes, and plasma cells, a reflection of a persistent reaction to injury, (2) tissue destruction, largely induced by the inflammatory cells, and (3) attempts at repair by connective tissue replacement, namely proliferation of small blood vessels (angiogenesis) and, in particular, fibrosis.

**Systemic effects of inflammation:**

Anyone who has suffered a severe sore throat or a respiratory infection has experienced the systemic manifestations of inflammation. Fever is one of the most prominent of such manifestations, other systemic manifestations include increase in slow-wave sleep, decreased appetite, increased degradation of proteins, hypotension and other hemodynamic changes, the synthesis of acute-phase proteins by liver, including C-reactive protein, serum amyloid A, complement, and coagulation proteins, and a variety of changes in peripheral blood leukocytes. IL-1, IL-6, prostaglandin (PGE) and TNF are important mediators of those reactions.

Analgesic anti-inflammatory drugs are used for the treatment of inflammation. This may be steroidal or non-steroidal in nature. These chemicals are target specific, and they have some side effects like gastro intestinal tract upset, acid peptic disorders, liver

and kidney malfunctions, immunosuppressant, induce of diabetes because of its chemical nature. Nowadays to prevent these side effects our physicians are started to prescribe our native resources like the medicinal plants as analgesic and anti-inflammatory drugs. These are having high therapeutic values does not produce any side effects like the modern analgesic anti-inflammatory drugs. The medicinal plants act as not only therapeutic values but also it has some preventive effect. By taking these plants surely we prevent relevant disease.

This review dealt with the anti-inflammatory activity of the ingredients of the Keelvayu nivarana churnam. They are *Alpinia officinarum*, *Hermidesmus indicus*, *Smilax china* and *Withania somnifera*.

**1. *Alpinia officinarum*. Hance:**

Chittrarathei is the dried rhizome of *Alpinia officinarum* (Fam. Zingiberaceae), a herb upto 2.5 m. in height, bearing perennial rhizome, growing in eastern Himalayas and southwest India and extensively cultivated all over India.

Botanical name	: <i>Alpinia officinarum</i> . Hance
Kingdom	: Plantae
Clade	: Angiosperms, Monocots,
Commelinids	
Order	: Zingiberales
Family	: Zingiberaceae
Genus	: <i>Alpinia</i>
Species	: <i>A.officinarum</i>

Vernacular Names: Bengali - Kulanjan, Kurachi Vach, English - Lesser galangal, Gujrati - Kulinjan Jaanu, Kolinjan, Hindi - Kulanjan, Kulinjan, Kannada - Doddarasagadde, Dhoomraasmi, Malayalam - Aratta, Marathi - Kulinlan, Koshta Kulinjan, Mothe kolanjan, Oriya - Kulanjana, Sugandhamula, Malaya Vaca, Mahabhari Vaca, Rasna (South), Punjabi - Dumparaastramu, Sanskrit - Rasna, Tamil - Chittrarathei, Telugu - Thumpa rashtram, Sanna-rashtram, Urdu - Khulanjan

**Cultivated in:** India, China - southeastern coast, Hainan, Japan, Thailand and Vietnam. Hong Kong is the commercial center for the sale and distribution of the lesser galangal.

**Properties:** Suvai - Karppu  
 Gunam - Thinmai  
 Virium - Veppam  
 Pirivu - Karppu.

**Part Used:** Rhizome.

**Action:** Expectorant, Febrifuge, Stomachic.

**Description**

**Macroscopic:** It can grow up to ten feet in height, though three to five feet is more common. The leaves are lanceolate (long and thin), and the flowers are white with streaks of red, growing from a spike at the top. The plant's rhizomes, the part known as galangal, are thin and tough, and they are the principal reason the plant is cultivated. They have orange flesh with a brown coating, and have an aromatic odor and a sweet flavor. These are smaller than greater galangal which have a stronger peppery pine-like bite that is lacking in the sweeter rhizomes of lesser galangal. It can grow several feet high, with long leaves and reddish-white flowers.

**Root** - The roots are adventitious, in groups, fibrous, persistent in dried rhizomes, about 0.5 to 2 cm. long and 0.1 to 0.2 cm. in diameter and yellowish-brown in colour.

**Rhizome** - Rhizome cylindrical, branched, 2 to 8 cm. in diameter, longitudinally ridged with prominent rounded warts (remnants of roots) marked with fine annulations; scaly leaves arranged circularly; externally reddish-brown, internally orange yellow in colour; fracture hard and fibrous; surface rough; odour pleasant and aromatic; spicy and sweet in taste.

**Microscopic:** Root - Transverse section of root circular in outline, single layered epidermis with barrel shaped cells having unicellular root hairs, hypodermis 3 or 4 cells deep and sclerenchymatous, cortex parenchymatous, many cells deep, with well developed intercellular spaces; endodermis showing prominent casparian strips and 'v' shaped thickening, followed by many celled sclerenchymatous pericycle; xylem and phloem in separate radial strands; centre occupied by a parenchymatous pith.

**Rhizome** - Transverse section of young rhizome circular in outline; epidermal cells small and angular, thick cuticle present, rhizome differentiated into a wide cortex and a central cylinder, both regions having irregularly scattered vascular bundles, each vascular bundle with a prominent fibrous sheath; inner limit of cortex marked by rectangular parenchymatous cells; stele with irregular, closely placed vascular bundles towards periphery, root traces present, schizogenous canals and oil cells with suberized walls found in cortex and in central region; most of the parenchymatous cells filled with starch grains which are ellipsoidal to ovoid, sometimes beaked, simple, 10 to 64 µm, hilum eccentric, circular or crescent shaped at the broad end, the narrow beaklike end become black when stained with dil. iodine water and chlor-zinc iodide but the remaining part become light blue or brown. Macerated preparation shows vessels 95 to 710 µm long and 19 to 190 µm broad, tracheidal fibres 68 to 920 µm long and 19 to 30 µm broad.

**Powder:** Orange brown; spicy and sweet in taste; shows parenchyma cells containing starch (as described under microscopy of rhizome), oil cells, schizogenous canals; vessels with scalariform and reticulate thickenings and tracheidal fibres.

**Identity, Purity and Strength:**

Foreign matter	: Not more than 2 per cent
Total Ash	: Not more than 5 per cent
Acid-insoluble ash	: Not more than 2 per cent
Alcohol-soluble extractive	: Not less than 6 per cent
Water-soluble extractive	: Not less than 13 per cent
Starch	: Not less than 22 per cent
Essential oil	: Not less than 0.4 per cent

**T.L.C.:** T.L.C. of the Methanolic extract on silica gel 'G' plate using Toluene: Ethyl acetate: Methanol (80:20:0.4) shows under UV (366 nm.) blue fluorescent zones of yellow, green and blue at Rf.0.15, 0.25, 0.69 respectively. On spraying with Anisaldehyde - Sulphuric acid reagent and heating the plate for five minutes at 105oC, six spots appear at Rf.0.15 (greyish green), 0.35(violet), 0.48 (greyish green), 0.63 (greyish green), 0.69 (green) and 0.91 (violet).

**CONSTITUENTS:** contains high concentrations of the flavonol galangin. Galangol, Galangin, Volatile essential oil. Essential oil, containing a - pinene, s - pinene, limonene, cineol, linalool, cedrol, eugenol, terpinen - 4 - ol and a - terpineol. Galanganal, galanganol B and C, 1'-S-1'-acetoxychavicol acetate, 1'S-1'-acetoxyeugenol acetate, trans-parahydroxy-cinnamaldehyde, trans-para-coumaryl alcohol, trans-para-coumaryl acetate, galanolacetone, and di (p-hydroxy-cis-styryl) methane.

**Uses:** The root is given in infusion in fevers, rheumatism and catarrhal affections even as ginger is given and its seeds possess similar medicinal virtues or properties.

**Important Formulations:** Sarapunga Vilvaathi Ilagam, Chukka Thylam, Lagu Santhanaathi Thylam, Kakkuvan Ilagam, Gandaka Rasayanam, Maha Vallathi Ilagam, Nanthi Mezhuagu, Narathai Ilagam, Parangipattai Rasayanam, Peenisa Thylam, Talisathi Vadagam, Thetrankottai Ilagam, Thippili Rasayanam, Thuthuvali Nei.

**Therapeutic Uses:** Soothaga vali, Aiya Suram, Muppini, Nanju, Neerrettrum, Talia pun, dal Vali, Vali Noigal.

**Dose:** Powder 3-6 grams.

**1. Hemidesmus indicus (L.) R.Br.**

Country Sarsaparilla, fragrant root – *Hemidesmus indicus* alias *Periploca indicus*, It is also called black creeper.

Botanical name : *Hemidesmus indicus* (L.) R.Br.  
 Kingdom : Plantae  
 Clade : Angiosperms, Eudicots, Asterids  
 Order : Gentianales  
 Family : Apocynaceae (subfamily Asclepiadoideae)  
 Genus : *Hemidesmus*  
 Species : *H.indicus*

**Vernacular Names:** Assamese - Vaga sariva, Bengali - Anantamul, Shvetashariva, English - Indian sarasa parilla, Gujrati - Kabri, Upalsari, Durivel, Hindi - Anantamul, Kapuri, Hindi-salsa, magrabu, Kannada - Anantamool, Bili namadaberu, Namada veru, Sogadeberu, Namadaberu, Sugangha-palada, Kariban-dha, Kashmiri - Anant mool, Malayalam - Nannari, Nannar, Naruneendi, Marathi - Upalsari, Anantamula, Oriya - Dralashvan lai, Anantamool, Onontomulo, Punjabi - Anantmool, Ushbah, Sanskrit - Sveta sariva, Ananta, Gopasuta, Anantamula, Sariba, Nagajihva, Gopakanya, Tamil - Nannari, Telugu - Sugandhi pala, Tella Sugandhi, Sugandhi, Gadisugandhi, Muttavapulagamu, Urdu - Ushbahindi.

**Synonyms' in Siddha texts:** Angaramooli, Narunetti, Pathalamooli, kopaagu, Saaribam, Paarkodi, neerundi, kaananusari, Krishnavalli, Saariyam.

**Cultivated in:** The plant is found in abundance in Northern India, Bengal, Travancore and Ceylon.

**Properties:** Suvai - Inippu, Kaippu  
 Gunam - Noimai, Thinmai  
 Virium - Thatppam  
 Pivivu - Inippu.

**Part Used:** Root bark.

**Action:** Alterative, Tonic, Demulcent, Diuretic, Diaphoretic.

**Description:**

**Macroscopic:** A perennial, slender, laticiferous, twining or prostrate, wiry shrub with woody root-stock and numerous slender, stems having thickened nodes. Leaves simple, opposite, very variable from elliptic-oblong to linear-lanceolate, variegated with white above, silvery white and pubescent beneath. Flowering in the rainy season, flowers purple crowded in subsessile cymes in the opposite leaf axils. Fruits slender follicles, cylindrical, 10cm long, tapering to a point at the apex, seeds flattened, black, ovate-oblong, and coma silvery white.

The tuberous root is dark-brown, about 30 cm. long and 3 to 8 mm. in diameter, cylindrical, thick, hard, somewhat tortuous, sparsely branched, provided with a few thick rootlets and secondary roots; external appearance dark brown, sometimes with violet-grey tinge; center yellow, woody, surrounded by a mealy white cortical layer; bark brownish, corky, marked with transverse cracks and longitudinal fissures and easily detachable from the hard central core; coma silvery white, tortuous with transversely cracked and longitudinally fissured bark. It has a strong central vasculature and a pleasant smell and taste sweetish, slightly acrid and aromatic.

**Microscopic:** Transverse section of root shows periderm consisting of three layers of tissues, cork, cork cambium and secondary cortex; cork cells radially flattened and rectangular in appearance filled with dark brown contents giving reactions of tannins; cork cambium, 2 or 3 layered, compressed, and filled with deep brown contents; secondary cortex, 3 or 4 layers of cells, similar to cork cells, with very little or no dark brown contents; secondary phloem consists of sieve elements, parenchyma, phloem ray cells along with

several laticiferous ducts; parenchyma cells filled with starch grains, diameter 7 to 10 µm, occasional prismatic crystals of calcium oxalate; laticiferous ducts scattered in parenchymatous tissue; cambium very narrow; xylem traversed by narrow medullary rays; vessels and tracheids characterized by the presence of pitted markings; pith absent and central region occupied by woody tissues.

**Powder:** Brown; shows parenchyma cells filled with oval or rounded starch grains 7 to 19 µm in dia., having 2 to 8 or more components or prismatic calcium oxalate crystals; pieces of laticiferous ducts; vessels with spiral thickenings.

**Identity, Purity and Strength:**

Foreign matter	: Not more than 2 per cent
Total Ash	: Not more than 4 per cent
Acid-insoluble ash	: Not more than 0.5 per cent
Alcohol-soluble extractive	: Not less than 15 per cent
Water-soluble extractive	: Not less than 13 per cent

**T.L.C.:** T.L.C of Chloroform soluble fraction of alcoholic extract on aluminium plate precoated with silica gel 60 F254 (E. Merck) 0.2 mm. thickness using Toluene: Ethyl acetate : Methanol (8:2:0.5), with Anisaldehyde- Sulphuric acid reagent and heating the plate, at 105°C for five minutes shows six spots at Rf. 0.59 (bluish grey), 0.65 (blue), 0.72 (pinkish violet), 0.80 (bluish grey), 0.91 and 0.94 (both pinkish violet).

**Constituents:** The roots of *H. indicus* contain 2-hydroxy, 4-methoxy-benzoic acid, essential oil containing mainly 2-hydroxy-4-methoxy benzaldehyde, nerolidol, borneol, linalylacetate, dihydrocarvylacetate, salicylaldehyde, isocaryophyllene, α-terpinylacetate, 1, 8- cineol, lupleol acetate, oleanane, ursane and lupine derivatives, coumarin lignoids - hemidesminine, hemidesmin 1 and 2. The leaves contain tannins, flavonoids, hyperoside, rutin and coumarin. Leucoderma lignoids such as hemidesminine, hemidesmin I and hemidesmin II are rare group of naturally occurring compounds present in leaves.

**Uses:** Decoction of this root mixed with cow's milk is given in cases of gravel and stranguary. Vaidyans prescribe it for vitiated conditions of pitha, burning sensation, leucoderma, leprocy, skin diseases, pruritis, asthma, bronchitis, hyperdipsia, ophthalmopathy, hemicranias, epileptic, fits, dyspepsia, helminthiasis, diarrhea, dysentery, hemorrhoids, strangury, leucorrhoea, abscess, arthralgia, fever and general debility. It is also used to purify the blood and correct the acrimony of the bile. Decoction or infusion of this root mixed with advantage in urinary complaints. Infusion of root bark mixed with milk and sugar is a good alterative tonic especially for children in case of chronic cough and diarrhea. A decoction of this root with that of colocynth mixed with that long pepper twice daily has been held in esteem in chronic skin diseases, syphilis, elephantiasis, hemiplegic and loss of sensation. It is used by unani doctors in the form syrup as a tonic.

**Important Formulations:** Sarapunga Vilvathi Ilagam, Lagu Santhanaathi Thylam, Pitha Sura Kudineer, Mandurathi Adai Kudineer, Parangipattai Rasayanam.

**Therapeutic Uses:** Azhal Noigal, uravedkai, Neerrettrum, Neerzhivu, Vandukadi.

**Dose:** Decoction 30- 50 ml twice daily. Take 30 - 50 grams coarse powder in 200 ml of water for preparing decoction.

**2. Smilax china L.**

Parangipattai is the tuberous root of *Smilax china* L. (Fam. Liliaceae), a deciduous climber with sparsely prickled or unarmed stem. It is imported from China and Japan. The tuberous roots are subjected to purification process before use.

Botanical name : *Smilax china* L.  
 Kingdom : Plantae

Clade	: Angiosperms, Monocots
Order	: Liliales
Family	: Liliaceae
Genus	: Smilax
Species	: S. china

**Vernacular names:** Arab – Kasbussini, Klaashabchinae, Bengali - Chopcheenee, Kumarika, Shukchin, China & Japan - Too-fup English - Chinna root, Bamboo Briar Root, Gujrati - Chopcheenee, Hindi - Chopcheenee, Chob-chini, Malayalam - China Pavu, Marathi - Chopcheenee, Sanskrit - Madhusnuhi, Dvipantara vaca, Watcha, Tamil – Parangichakkai, Parangipattai, Telugu - Pirngi-chekka,

**Synonyms' in Siddha texts:** Madhusmigam, Madhusmiki, cheenappattai, Parangichakkai, Cheenappaavu

**Cultivated in:** China, Japan and Himalayans of India.

**Properties:** Suvai – Inippu, Gunam – Ilagu, Varatchi, Virium – Tadpam, Pirivu – Inippu

**Part Used:** Root (Rhizomes)

**Action:** Alterative, Aphrodisiac, Anti-syphilitic, Depurative, Tonic

#### Description:

**Macroscopic:** A hard tendril climber with sparsely prickled or unarmed stems and thick tuberous rhizomes. The stem is woody, sparsely prickly, and 1–5 m (3 ft 3 in–16 ft 5 in) long. Petiole is 0.5–1.5 cm (0.20–0.59 in) long; Leaves simple, alternative, elliptic, rounded at the base, prominently nerved, 3–10 cm (1.2–3.9 in) long and 1.5–6 cm (0.59–2.36 in) wide, sometimes wider. Flowers many, small and white in umbels; fruits red berries, globose, and 0.6–1.5 cm (0.24–0.59 in) in diameter. Tubers about 6 to 12 cm. long, 2 to 4 cm. wide, rough, irregular, cylindrical, curved, slightly tapering with brownish or blackish scars; externally brownish-yellow in colour, and internally brown in colour; fracture hard; odour not characteristic; taste slightly bitter.

**Microscopic:** Cortex shows several layers of thin-walled, polygonal, elongated mucilaginous parenchymatous cells, a few cells containing raphides of calcium oxalate; endodermis not distinguished; ground tissue having several vascular bundles consisting of usual elements; fibres long and aseptate; numerous simple and compound starch grains, measuring 16 to 38 µm in dia. with 2 to more than 9 components mostly spherical to ovoid, having hilum in centre.

**Powder:** Light brown; shows fragments of mucilaginous parenchymatous cells of cortex, fibers and vessels with reticulate thickening; a few scattered needles of calcium oxalate from raphides; numerous simple and compound starch grains measuring 16 to 38 µm in dia. with 2 to more than 9 components, mostly spherical to ovoid having hilum in centre.

#### Identity, Purity and Strength:

Foreign matter	: Not more than 2 per cent
Total Ash	: Not more than 0.6 per cent
Acid-insoluble ash	: Not more than 0.06 per cent
Alcohol-soluble extractive	: Not less than 0.8 per cent
Water-soluble extractive	: Not less than 5 per cent

**T.L.C.:** T.L.C. of the Alcoholic extract on silica gel 'G' plate using Toluene: Ethyl acetate: Methanol (5:5:2) as mobile phase shows on spraying with Anisaldehyde- Sulphuric acid reagent and heating the plate at 105°C until the colour develops , ten spots at Rf. 0.09 (dark green), 0.17 (violet), 0.21 (dirty yellow), 0.26 (grey), 0.32 (yellow), 0.48, 0.55 and 0.58 (all violet), 0.73 (greenish blue) and 0.77 (violet).

**Constituents:** Starch, Glucoside, Plant sterol, Saponine, Sarsaponin, parallin, β-sitosterol, stigmasterol and their glucosides, daucosterol, isoseryl-Smethyl-cysteamine sulphoxide and dihydrokaempferol-5-O- β-D- glucoside. Kaempferol 7-O-glucoside, a flavonol glucoside, can be found in S. china. Hydrolysis of crude saponin yielded sarasapogenin, mp. 2000, its pseudogenin, mp, 1660 a steroid sapogenin of neo series, mp 1320, and β-sitosterol from roots, a new bisdesmosine 22-hydroxyfurostanol saponin-asperoside-from leaves.

#### New compounds:

Silybin (silymarin, silybum substance E6) mp. 1670, isolated from fruits along with 4',5',7-trihydroxy-3',5'-dimethoxyflavonol and other compounds, mp. 1510, 1670, 1730, 2000, and 2060; cis, cis-heptadeca-1,8,15-trien-11,13-diene-10-ol and 7-phenyl-2-heptene-4,6-diyne-1-al, mp. 630, isolated; three flavonoides from fruits.

**Important Formulations:** Rasagandhi Mezhugu, Rasa Mezhugu, Idivalathi Mezhugu, Kalarchi Thylam, Gandaga Rasayanam, Maha Vallathi Ilagam, Nerunjil Kudineer, Parangipattai Churanam Parangipattai Pathangam, Parangipattai Rasayanam.

**Uses:** A preparation obtained by a prolonged boiling of the root on water is said to be useful not only as a tonic but also a cure in rheumatic and venereal complaints. It is procurable in all bazaars. The decoction is used with the three myrobalans (threepalai) in cases of piles, fistula, seminal loss, carbuncle, diabetes, poisonous bites, scabies, leprosy, and other coetaneous affections. It should always be used after purification which is done by boiling small bits of it in milk, and then dried. The powder of the purified root, if given in milk twice a day in half teaspoon doses and kept on salt free diet cures obstinate scabbies. They are useful in syphilis, leprocy, psoriasis, fever, seminal weakness, vitiated conditions of vatha – flatulence, dyspepsia, colic, neuralgia, constipation and general debility.

**Therapeutic Uses:** Athikalichal, vali noiga, Solai, Karappan, Mantham, Nirzhvu, nirvedkai, Pilavu, Pun, Uppisam, Vayirrirachal, Vetta.

**Dose:** Powder 3-6 grams.

#### 3. Withania somnifera (L.)

Amukkara is the dried root of *Withania somnifera* (L.) a perennial shrub, found in waste land, cultivated fields and open grounds throughout India. Roots are collected in winter, washed and cut into small pieces. The dried root is subjected to purification process before use.

Botanical name	: Withaniya somnifera (L) Dunal
Kingdom	: Plantae
Clade	: Angiosperms, Eudicots, Asterids
Order	: Solanales
Family	: Solanaceae
Genus	: Withaniya
Species	: W.somnifera

**Vernacular Names:** Arabi - Habbul kaknaje, Assamese - Ashvagandha, Bengali - Aswagandha, English - Winter cherry, Gujrathi - Ghodakum, Ghoda, Asoda, Asan, Asundha, Asana, Goa - Fatarfoda, Hindi - Asgandh, Punir, Kannada - Sogade-beru, Viremaddlinagadde, Pannaeru, Aswagandhi, Kiremallinagada, Angarberu, Hiremaddina-gida, Malayalam - Amukkumam, Marati - Askandhatilli, Persian - Tukhma kaknaje, Punjab - Asgand, Isgand, Rajasthan - Chirpotan, Sanskrit - Aswagandha, Hayagandha, Varahakarni, Tamil - Amukkura, Amkulang, Amukkumam-kilangu, Amulung-kilangu (root), Aswagandhi, Telugu - Penneru-gadda, Pulivendram, Vajigandha, Trade - Aswagandha, Turangi - Gandha, Urdu - Asgandh.

**Synonyms' in Siddha texts:** Amukkiri, Amukkuravi, Amukkuravu,

Amukkinang kilangu, Aswagantham, Aswaganthi, Asuvam, Eulichsevi, Kidisevi, Varakkanni.

**Cultivated in:** Mathya Pradesh, Punjab, Sindh, Gujarat, Kerala, Rajasthan, Nepal, China, Yeman.

**Properties:** Suvai – Kaippu,  
Gunam – Ilagu,  
Virium – Veppam,  
Pirivu – Karppu.

**Part Used:** Leaf, Fruits, Root (Tuber)

**Action:** Leaf: Febrifuge  
Fruits : Diuretic  
Root : Alterative, Aphrodisiac, Deobstruent, Diuretic, Tonic, Hypnotic, Sedative.

#### Description:

**Macroscopic:** An erect branching undershrub breaching about 2-3 ft. in height, thickness varying with age, roots bear fibre-like secondary roots, outer surface buff to grey-yellow with longitudinal wrinkles; crown consists of remains of variously thickened stem bases; fracture short and uneven; odour characteristic; taste bitter and acrid. Leaves are dull green, elliptic, usually up to 10–12 cm (4 to 5 in) long, with yellowish green flowers, fruits globose berries which are orange coloured when mature, enclosed in a persistent calyx. The fleshy roots when dry are cylindrical, gradually tapering down with a brownish white surface and pure white inside when broken. Its berry resembles gentian root in external appearance.

**Microscopic:** Transverse section of root shows cork exfoliated or crushed; when present rectangular, radially flattened and non-lignified; cork cambium 2 to 4 diffused rows of cells; secondary cortex about twenty layers of compact parenchymatous cells mostly filled with starch grains; phloem consists of sieve tubes, companion cells, phloem parenchyma; cambium 4 or 5 rows of tangentially elongated cells; xylem hard forming a closed vascular ring separated by multiseriate medullary rays.

**Powder:** Yellowish grey; shows cork cells, parenchyma cells, tracheids, vessels, fibers and starch grains.

#### Identity, Purity and Strength:

Foreign matter	: Not more than 2 per cent
Total Ash	: Not more than 7 per cent
Acid-insoluble ash	: Not more than 1 per cent
Alcohol-soluble extractive	: Not less than 15 per cent
Water-soluble extractive	: Not less than 27 per cent

**ASSAY:** HPLC conditions for the separation of withaferin A in Alcohol extract. Mobile phase: n- Hexane: Isopropanol (9:1) Flow rate: 0.2 ml/min. Column: Porasil A coiled column (1.2ft. x 1/8 inch) Detector: UV at 225 nm.

**T.L.C.:** T.L.C. of Petroleum ether soluble fraction of Alcohol extract on an aluminium plate precoated with silica gel 60 F254 (E.Merck) 0.2 mm. thickness using Petroleum ether (80 -100° C):Chloroform (1:1) spraying with 10% Methanolic Sulphuric acid reagent and heating the plate for ten minutes at 105°C shows two spots at Rf. 0.17 (violet) and 0.92 (greyish brown).

**Constituents:** Withanolides- withaferin A, withanone, withanolides I, II, III, III A, C, D, E, F, G, H, I, J, K, L, M, WS-I, P and S, withasomidienone, cuscohygrine, anahygrine, tropine, seudotropine, anaferrine, isopellatierine, 3- tropylogloate. Contain a bitter alkaloid "Somniferin" having Hypnotic property, also resin, fat and colouring matters. A reducing sugar phytosterol, puranol, mixture of saturated and unsaturated acids and a small quantity of a basic substance supposed to be an alkaloid have been isolated. Withanine, Perinonyine – Alkaloides, Plant Sterol, also present. A new Withanolide-3β – hydroxyl-2-3-dihydrowithanolide F (1) mp 260° – and ergosta-5, 25-dien-3β , 24- – diol(II) isolated from fruits and

their structures determined, a new withanolide-3β-hydroxy-2,3-dihydro-withanolide H(III)- isolated from fruits and its structure determined, sitosterol β –D-glucoside also isolated. Withanolide E showed antitumor activity and immunosuppressive properties.

**Uses:** The leaves are very bitter and are given in infusion in fever. They are applied to inflamed tumors. The root is applied to obstinate ulcers and rheumatic swellings of the joints. The fruit is medicinally diuretic, and the roots and leaves are powerfully narcotic and alexipharmic. The leaves rubbed over with castor oil are applied to carbuncles. The seeds coagulate milk and thus help in making butter. Currently used in all types of gastric disorders, rheumatic pain, insomnia and sexual insufficiency

**Important Formulations:** Amukkura Churnam, Rasagandhi Mezhugu, Idivalathi Mezhugu, Gandaga Rasayanam, Maga Elathi Kuligai, Maha Vallathi Illagam, Nanthi Mezhugu, Naarathai Ilagam, Parangipattai Rasayanam.

**Therapeutic Uses:** Soolai, Curam, Karappan, Kayam, Thodam, Udal vanmaikkuraivu, Vali noigal, Veluppu noi/Pandu, Vikkam, Vinthukkuraivu.

**Dose:** Powder 3-6 grams.

#### Conclusion:

The Indian system of medicines like Siddha, Ayurvedha, and Unani are used the formulations from medicinal plants for all type of diseases, these all are economical, safe and effective. They have good analgesic, anti-inflammatory, anti-pyretic, hypnotic, anxiolytic, hepato protective activity. Many of them have been studied scientifically and proved to be potent anti-inflammatory substances. The anti-inflammatory agents from herbal are compounds like alkaloids, aldehydes, flavonoides, saponines, polysaccharides, terpenoides.

The present review is about anti-inflammatory activity of some medicinal plants. Here, Withania somnifera, Smilax china, Hemidesmus indicus and Alpinia officinarum are discussed on the basis of its anti-inflammatory activity. In this review, the plants Botanical name, Kingdom, Clade, Order, Family, Genus and Species names are discussed. The plants vernacular names, synonyms in siddha literature are given detail. The medicinal plants cultivated areas and origins are mentioned. Its properties, part used for therapeutic purposes, and its actions, *gunams* are entitled. The detailed reviews of the descriptions about the medicinal plants are given. The assay study and TLC findings are given. The constitutions of the medicinal plants are explained. The important medicinal formulations and its therapeutic values and its general dosages are given.

By the above review all the medicinal plants are having very good anti-inflammatory activity. Our traditional system of treatments is based on the nativity. Our nativity treatments based on medicinal plants which grows on *marutham* (land and belonging to land) and *kurunji* (hills and belonging to hills) *thinai*. These medicinal plants are having very good anti-inflammatory activity, without producing any side effect, like modern medicine's steroidal and NSAIDs. The steroidal and NSAID has the side effects on GIT, liver and kidneys. So the medicinal plants have the major role in treating acute and chronic inflammatory diseases, without producing any side effects.

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