

## A DRUG REVIEW ON KARAI RASAYANAM A SIDDHA PEDIATRIC DRUG SPECIFIED FOR ACUTE NASOPHARYNGITIS (NEERKANA MANDHAM) IN CHILDREN.

**\*Dr. P. Alarmel Mangai**

MD. (Siddha), Assistant Medical Officer-GH Seynamvilai, Kanyakumari.

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**\*Corresponding Author**

**Dr. P. Alarmel Mangai**

MD. (Siddha), Assistant

Medical Officer-GH

Seynamvilai, Kanyakumari.

### ABSTRACT

Medicinal plants are the first line of treatment in the field of Siddha system an ancient traditional medicine system discovered by many of the Siddhars with their extraordinary wisdom. Siddha system plays a wide ranged role in the field of pediatrics. It ensures the health of the children with its astonishing herbal formulations right from their birth, to prevent the illness. Here in this review an attempt has been done to provide a detailed information of the ingredients of the medicine Karai Rasayanam which has been specified for respiratory illness in children by Siddhars. This the simple formulation comprising only karai fruit, cows milk, ghee and cane sugar. Dramatically the medicine gives the

first line treatment for common cold. Running nose, cough, nasal block are relieved with in few doses of the medicine which is very sweet in taste and easily palatable to the pediatric group with nil ill effects.

**KEYWORDS** Karai rasayanam, Siddha, Pediatric drug, common cold.

### INTRODUCTION

Plants are the major source for all the micro and macro organisms in this world. There are huge variety of Plant group among them most of them vere with ample of medicinal uses. Many medicinally used plants were established and used knowing their power and huge of them were unused. In many of the Siddha literature most number of plants along with their medicinal uses have been mentioned promptly. Its time to bring them out with scientific evidences and establish them to the whole world. Using of such medicinal plants in the way said by the Siddhars reduces the use of high doses of antibiotics and other medications in

pediatric field for small discomforts. Here the plant named karai is found locally in the fields, a little review of the plant is as follows.

## **CANTHIUM PARVIFLORUM**

### **PLANT DESCRIPTION**

Kingdom: Plantae

Divison: Magnoliophyta

Class: Magnoliopsida

Clade: Angiosperms

Order: Gentianales

Family: Rubiaceae

Subfamily: Ixoroideae

Genus: *Canthium*

Species: *parviflorum*



**KARAI PAZHAM (*Canthium parviflorum*)**

### **REGIONAL AND OTHER NAMES**

English: wild jessamine

Kanada: Balasu, Ganduk-koral, karee

Malayalam: kara, kancangari, Niruri, kirma, kabdar

Tamil: karai

### **HABIT AND HABITAT**

A rigid shrub or a small tree, occurring through out the deccan peninsular from Gujarat to maharashtra southwards and in bihar and orrisa.

## PHYTO CHEMICAL COMPOUNDS

### Phytochemicals

Phytomedicines such as aspirin, vincristine, vinblastine, cocaine, digitoxin, quinine, and morphine are still in used to treat or prevent various disorders (Sahoo et al., 2010). terpenoids and flavonoids have remarkable anti-inflammatory activity, our present work aims at evaluating the in-vitro anti-inflammatory activity of *Canthium parviflorum* by protein denaturation method.

The parts of herbal plant *Canthium parviflorum*, have been used traditionally for many years in the treatment of several diseases such as reduced haemoglobin level in blood, toothache, respiratory diseases and also known for hypoglycemic action. This is also used in the treatment of inflammatory diseases.

The isolation of several components such as

taraxerol,

d-mannitol,

petunidin and

long chain ester from the thorns,

$\beta$ -sitosterol,

sakuranetin-4'-Oglycoside,

long chain acids and alcohols

from the leaves of *Canthium parviflorum* Lam. is being reported for the first time.

## PHARMACOLOGICAL SCREENING

A large number of medicinal plants still remain to be investigated for their possible pharmacological values. International Standard Serial Number (ISSN): 2249-6807 79 Full Text Available On [www.ijipls.com](http://www.ijipls.com) Kala et al., 2014 reported though the callus extract of *Canthium parviflorum* has callus extracts do not contain potent antioxidant,  $\alpha$ -glucosidase, hypocholesteromic and tyrosinase inhibition activities.

In addition to this, the *Canthium* plant extracts also showed anti-inflammatory activity and cytotoxic activity also.

*Canthium parviflorum* chloroform callus extract has shown remarkable cytotoxicity. It is likely that anti-cancer activity of this plant extract might be attributed to anti-oxidant activity.

## A REVIEW ON PHYTOCHEMICAL AND PHARMACOLOGICAL SIGNIFICANCE OF *CANTHIUM PARVIFLORUM* LAM

### ACTIVE CONSTITUENTS IN *CANTHIUM PARVIFLORUM*

Ethanollic extracts of *Canthium parviflorum* reported that the 22 active constituents present in the leaf which are later confirmed by GC-MS analysis Biphenyl, 2-Methyl-4-heptanone, Di-Isodecyl Phthalate, 1,2,4,5-Tetroxane, 3,3,6,6-Tetrapheny,-3-Oxo-Alpha,-Ionol, 4-(2-Hydroxy-2,6, 17-Icosatrienoate, Trimethyl cyclohexyl)-3-buten-2-one, E-11-Hexadecanoic acid, Ethyl Hexadecanoate, Phytol, 12-Octadecanoate, Ethyl Linolenate, 1-Hexadecanol, 2-Phenoxy-2-phenylpropanoic acid, All-trans-squalene, Methyl Linolenate, Gamma-Tocopherol; bis (2-hylhexyl) ester, Stigmasterol and Gamma-stigmasterol. Based on the phytochemical results, it is concluded that *Canthium parviflorum* is most economically valuable plant.

### ANTIOXIDANT ACTIVITY

The major goals of antioxidant treatments are to reduce oxidative stress by preventing or delaying the progression or reversing the complications of the disease. Medicinal plants often contain substantial amounts of antioxidants such as polyphenols, flavonoids, anthocyanins, and tannins.

*Canthium parviflorum* leaf extracts shows Anti oxidant activity and diuretic action. More antioxidant activity exhibited by the leaf extract of *Canthium parviflorum*. This anti-oxidant activity of the herb may be due to the presence of phytochemicals such as bioflavonoids. The methanolic leaf extract of *Canthium parviflorum* also exhibits antioxidant activity. Prabhu *et al.*, (2014). Reported that the *Canthium parviflorum* leaf extracts showed Potent of antioxidant and anti-arthritis activity.

Previously reports on methanolic fruits extract of *Canthium parviflorum* showed more antioxidant properties Ravichandra *et al.* (2014) reported that the bark extract of *Canthium parviflorum* exhibits the same activity.

### ANTIMICROBIAL ACTIVITY

The antimicrobial nature of the plants has been attributed to the wide variety of compounds they synthesized. The screening of bioactive compounds has always been great interest to a scientist for new source of drugs useful in the treatment of infectious diseases. Many reports

showed the effectiveness of traditional herbs against microorganisms. As a result plants are one of the bedrocks for modern medicine to attain new principles.

.Ramanathan *et al.* (2013) reported the leaf extract of *Canthium parviflorum* showed potent antimicrobial activity with aqueous, methanol and chloroform extracts against *Escherchia coli*, *Klebsiella pneumonia*, *Staphylococcus aureus*, *Aspergillus niger* and *Penicillium sp.*

*Canthium parviflorum* leaf callus extracts exhibited potent antibacterial activity against both gram positive and negative bacteria, exactly the chloroform and methanol extracts showed high zone of inhibition and also showed high potent activity against few fungal species. (Kala et al., 2015) Based on the previous reports, results indicated the callus extracts of *Canthium parviflorum* has potent antibiotic compounds which need to be isolated, characterized and screened.

#### **ANTI-INFLAMMATORY ACTIVITY**

*Canthium parviflorum* leaves shows significant anti-inflammatory activity in *in vitro* methods tested by protein denaturation method. Denaturation of proteins is a well-documented cause of inflammation and rheumatoid arthritis and the terpenoids and flavonoids showed remarkable anti-inflammatory activity.

#### **ANTI PYRETIC AND ANTI DIARRHOEAL ACTION**

Ethno botanical study of medicinal plants of Sri Pancha Narasimha Swamy and Sri Matsyagiri Narasimha Swamy *Canthium parviflorum* L Thunb Balusu Rubiaceae Used for the management of fever, dysentery, hence it may be concluded that it has Anti – pyretic action and anti – diarrhoeal action.

#### **ETHNO-MEDICINAL USES (RESPIRATORY INFECTIONS AND GI TRACT)**

*Canthium parviflorum* (Rubiaceae), a medicinal plant, has been widely used in traditional systems of medicine in conditions of diarrhea, fever, leucorrhoea, intestinal worms, and general debility. This plant has been traditionally known to treat snakebite in some villages of Shimoga district in Karnataka, India and to possess wound-healing property. The present study focused on determining the antioxidant ability of solvent extracts of *C. parviflorum*.

**COW'S MILK****COW MILK (*Pasumpaala*)****COWS MILK**

Cow milk is a nature's worthy contribution to the man kind. cow milk plays a major role in human health. It influences the growth of the children both physically and mentally, even from new born to adulthood.

In traditional siddha medical practices there is a wide use of cow milk for medicine preparations purification of the drugs and for dietary regimens. cow milk has been used as a major supplementary diet for growing children world wide. The medicines prepared with cow milk will not only manage the disease also influences the general health of the people.

In cow milk many nutritionally valuable substances are present. It majorly has lipid substances which are very essential in the brain metabolism, which also enhances growth and reproduction.

In average, milk contains about 33 g total lipid (fat)<sup>[1]</sup>

**Table 1<sup>[1]</sup>: Milk composition and percent contribution to the daily dietary reference intakes of some nutrients in 0.5 l whole milk, and their main health effects.<sup>[1]</sup>**

Milk component	Concentration in 1 l whole milk <sup>a</sup>	Percent contribution of 0.5 l whole milk to reference intake <sup>b</sup>	Health effects
Fat	33 g/l		Energy rich
Saturated fatty acids	19 g/l		Increase HDL, small dense LDL, and total cholesterol. Inhibition of bacteria, virus
Oleic acid	8 g/l		Prevent CHD, gives stable membranes
Lauric acid	0,8 g/l		Antiviral and antibacterial
Myrisitic acid	3,0 g/l		Increase LDL and HDL
Palmitic acid	8 g/l		Increase LDL and HDL
Linoleic acid	1,2 g/l		Omega-6 fatty acid
Alpha linolenic a	0,75 g/l		Omega-3 fatty acid
Protein	32 g/l	30–40%	Essential amino acids, bioactive proteins, peptides. Enhanced bioavailability
Lactose	53 g/l		Lactosylation products
Calcium	1,1 g/l	40–50%	Bones, teeth, blood pressure, weight control
Magnesium	100 mg/l	12–16%	For elderly, asthma treatment
Zinc	4 mg/l	18–25%	Immune function. Gene expression
Selenium	37 ug/l	30%	Cancer, allergy, CHD
Vitamin E	0,6 mg/l	2 %	Antioxidant
Vitamin A	280 ug/l	15–20%	Vision, cell differentiation
Folate	50 ug/l	6 %	DNA synthesis, cell division, amino acid metabolism
Riboflavin	1,83 mg/l	60–80%	Prevent ariboflavinosis
Vitamin B <sub>12</sub>	4,4 ug/l	90%	Key role in folate metabolism

<sup>a</sup> data from USDA Food Composition Data

<sup>b</sup> Dietary reference intake (DRI) for men and women

So, it has been known that cow milk has most of the nutrition and it helps the body to be healthier more. Some media reports claim that raw milk is healthy because of the presence of “good bacteria.” Probiotics are defined as “live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.”<sup>[2]</sup>

Intake of raw milk has been indicated in Siddha system of medicine as THAROSHANA SIKICHAI<sup>[14]</sup> for the management of certain diseased conditions such as peripheral neuritis.

It has been a habit of ancient people to take milk without boiling that is immediately after squeezing it from cow before the heat expels.

Children who drank most milk gained more weight, but the added calories appeared responsible. Contrary to our hypotheses, dietary calcium and skim and 1% milk were associated with weight gain, but dairy fat was not. Drinking large amounts of milk may provide excess energy to some children.<sup>[3]</sup>

Oral administration of cultures of fermentative bacteria would, it was proposed, “implant” the “beneficial” bacteria in the intestinal tract. Lactic-acid-producing bacteria were favored as fermentative bacteria to use for this purpose, since it had been observed that the natural fermentation of milk by these microbes prevented the growth of non-acid-tolerant bacteria, including proteolytic species.<sup>[5]</sup>

Lactobacillus GG is a safe probiotic bacterium known to transiently colonize the human intestine. It has been found to be useful in treatment of several gastrointestinal conditions characterized by increased gut permeability. In the current study, the efficacy of Lactobacillus GG was investigated in children with Crohn's disease.<sup>[4]</sup>

It was meant that not only milk the milk products such as curd, buttermilk also has the efficacy to make the mankind more healthier. It prevents us from certain gastro intestinal diseases.

### **GHEE**

Ghee is widely considered as the Indian name for clarified butterfat, usually prepared from cow's milk.



**GHEE (*Pasu nei*)**

## GHEE

Ghee, an yellow coloured semi solid substance which is derived from milk. Until it is over or reheated again and again it is good source of fat which is essential for our body. Asian Indians use Ghee in their day to day life, without ghee their diet will not be completed. In Siddha system of Medicines Ghee, also known as clarified butter or anhydrous milk fat, is prepared by heating butter or cream to just over 100°C to remove water content by boiling and evaporation, then filtering out the precipitated milk solids.<sup>[6]</sup> It increases the digestive fire (*agni*) and improves absorption and assimilation. It nourishes ojas, the subtle essence of all the body's tissues (*dhatu*s). It improves memory and strengthens the brain and nervous system. It lubricates the connective tissues, thereby rendering the body more flexible.<sup>[6]</sup> With regard to the three *doshas*(organizing principles that govern the physiology), ghee pacifies Vata and *Pitta* and is acceptable for *Kapha* in moderation. Ghee is considered sacred and used in religious rituals as well as in the diet in India. In ancient India, ghee was the preferred cooking oil. It was considered pure and was felt to confer purity to foods cooked with it.] Ghee and other similar products such as *samn* (variant of the Arabic term *samn*) are used in many parts of the world.<sup>[6]</sup>

The global demography is experiencing ageing that means process of rising in proportion of older people above 65 years of in the coming decades. Many problems arise with increasing age, memory loss being one of the important ones. This may be due to Alzheimer's disease or age related dementia. Memory enhancers, therefore, find important application in these patients. Many Ayurvedic products which are being used traditionally for memory enhancement are ghruta or ghee based. Goghruata (Cow Ghee) itself being used as a brain tonic to improve memory. It is said to promote all three aspects of mental functioning-learning, memory and recall. The traditional texts also designate that cow ghee is a, Medhya Rasayana, beneficial for mental alertness and memory in adults as well in children.<sup>[7]</sup>

Ghee is well known on the Indian subcontinent and it was produced in ancient India as far back as 1500 bc (Achaya, 1997). The major use of ghee is in frying and dressing foods, and it is considered a sacred article in some religious rites (Rajorhia, 1993). Ghee in pure form is used to feed children because of its therapeutic value, and is mixed with honey and used as an aphrodisiac. Ghee is considered to be fairly stable due to the low water content and high antioxidative properties. Ghee is also rich in CLA, which shows anticarcinogenic effects.<sup>[8]</sup>

High CLA enriched ghee increases the antioxidant enzyme activities such as CAT, SOD and GST activities; which concludes its antioxidant nature. Feeding of high CLA enriched ghee also lead to a decrease in cholesterol, triglyceride and high density lipoproteins and inturn, decreased the low density lipoproteins, which finally lead to the reduction in atherogenic index, which proves its antiatherogenic property. The present study indicates that high CLA enriched ghee (clarified butter) has antioxidant and antiatherogenic activities suggesting that ghee can be as an important food component for decreasing the risk of cardiovascular diseases.<sup>[9]</sup>

Cow Ghee is known to be digested 96% which is highest as compared to all other vegetable or animal source fats. It contains antioxidants like Vitamin E and beta carotene (600IU) besides other nutrients like phospholipids, diglycerides and triglycerides. Cow Ghee is regularly used in formulations in Ayurveda especially for chronic and degenerative ailments. It is either used as a part of a formulation as a nourishing, extracting, assimilating and/or absorbing agent.<sup>[10]</sup>

## CANE SUGAR

### DESCRIPTION OF CANE SUGAR

Cane sugar is the name given to sucrose, a disaccharide produced from the sugarcane plant and from the sugar beet. The refined sugars from the two sources are practically indistinguishable and command the same price in competitive markets.



**CANE SUGAR (*Karumbu sarkarai*)**

### SUGARCANE CHARACTERISTICS

Sugarcane contains not only sucrose but also numerous other dissolved substances, as well as cellulose or woody fibre. The percentage of sugar in the cane varies from 8 to 16% and

depends to a great extent on the variety of the cane, its maturity, condition of the soil, climate and agricultural practices followed.

The constituents of ripe cane vary widely in different countries and regions but fall generally within the following limits.

Constituent Percentage range Water 69.0 – 75.0

Sucrose 8.0 – 16.0

Reducing sugars 0.5 – 2.0

Organic matter other than sugar 0.5 – 1.0

Inorganic compounds 0.2 – 0.6

Nitrogenous bodies 0.5 – 1.0

Ash 0.3 – 0.8

Fibre 10.0 – 16.0

### **ORGANIC COMPOUNDS**

Organic matters other than sugar include proteins, organic acids, pentosan, colouring matter and wax. Organic acids present in cane are glycolic acid, malic acid, succinic acid and small quantity of tannic acid, butyric acid and aconitic acid.

These vary from 0.5 to 1.0% of the cane by weight. The organic compounds are made up of phosphates, chlorides, sulphates, nitrates and silicates of sodium, potassium, calcium, magnesium and iron chiefly. These are present from 0.2 to 0.6%. The nitrogenous bodies are albuminoid, amides, amino acids, ammonia, xanthine bases, etc. These are present to the extent of 0.5 to 1.0%. Fibre is the insoluble substance in the cane. Dry fibre contains about 18.0% lignin, 15% water-soluble substances, 45% cellulose and the rest hemicellulose.

### **PHARMACOLOGICAL ACTIVITY**

Sugarcane contains various phytochemicals including phenolic compounds, plant sterols, and policosanols. Phenols help in the natural defense of plants against pests and diseases, while plant sterols and policosanols are the components of wax and plant oils. The phytochemicals have gained increased interest due to their antioxidant activity, cholesterol-lowering properties, and other potential health benefits. Several workers have reported the different biological activities of sugarcane in various *in-vivo* and *in-vitro* test models.

### ANALGESIC ACTIVITY

Ethanol extracts (95%) of both fresh leaves and shoots were administered intragastrically to mice at a dose of 1 g/kg. The leaf extracts were active against benzoyl peroxide-induced writhing and tail-flick response, but ethanol extract of shoots were active only against the tail-flick method.

### ANTI-INFLAMMATORY EFFECT

Mixtures of fatty acids isolated from sugarcane wax were examined for their anti-inflammatory effect on both rats and mice. Oral administration of this mixture showed anti-inflammatory activity in the cotton pellet granuloma assay and in the carrageenan-induced pleurisy test, both in rats, as well as in the peritoneal capillary permeability test in mice.

### CONCLUSION

It is a well known that Traditional system of medicine always played an important role in meeting the global health care needs. Here the formulation Karai rasayanam which has been specified for Acute Nasopharyngitis in children has been a boon. All the ingredients mentioned has a anti inflammatory effects, anabolic effects, immune enhancing effects. All the drugs are home friendly, which are commonly used in our day to day life. This is the great speciality of our Siddhars to make use of the common things in an appropriate way. Here I conclude the formulation karai rasayanam will be the most useful way to treat basic respiratory illness in the field of paediatrics.

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