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## A natural gift - *Cephalandra indica*

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### Abstract

*Cephalandra indica* commonly known as Lvy Gourd, Little Gourd and Kovai belongs to family Cucurbitaceae. This plant is used in Homoeopathy as antidiabetic in India. It contains an enzyme with amyolytic properties, a hormone and traces of an alkaloid and it produces reduction of sugar in the blood and urine of patients suffering from glycosuria. *Cephalandra indica* reported to exhibit anti carotenoids, anit inflammatory, anti diabetic, antioxidant activities, antimicrobial and flavonoid isolated from *C. Indica* aerial parts. In India *Cephalandra indica* are used widely as vegetable.

**Keywords:** *Cephalandra indica*, antidiabetic, Phytochemical, antioxidant

### 1. Introduction

*Cephalandra indica* consists of nearly 110 genera and over 700 species. Although mostly have old world origins, many species originated in the new world and at least 6 genera have origins in both hemispheres. In the last few decades, there is exponential growth in the field of herbal medicine. It is getting popularized in developing and developed countries owing to its natural origin and lesser side effects.

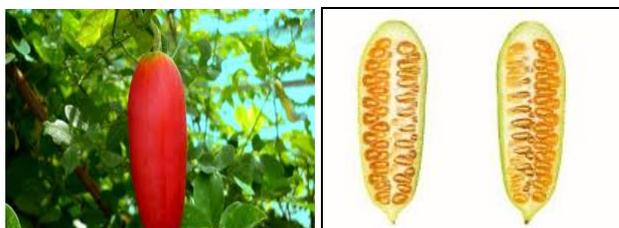
Indian systems of traditional medicines namely Homoeopathy, Ayurvedia and Unani nearly about 200 plant species for treatment of various diseases from ancient times<sup>[1]</sup>. About sixty thousand plant species were used for medicinal purpose worldwide<sup>[2, 3]</sup>. The World Health Organization (WHO) estimated near about 80% of world population both in developing and developed countries use herbal drugs for various ailments. This plant is one of the tremendous plants of Homoeopathy system and Ayurveda which is commonly known as kundru<sup>[4, 5]</sup>. It has lot of action against a various kind of disease. It is generally used as mother tincture and 6C, 30 potency in Homoeopathy System.

WHO recommended the evaluation of traditional plants used for the treatment of diabetics as they are effective, nontoxic with fewer or no side effects and are considered to be excellent candidates for oral therapy. There are also several reviews on medicinal plants possessing anti diabetic activity that have been used a traditional medicines. *Cephalandra indica* exhibit various Phytochemical like saponins, glavonoids, sterols and alkaloids. These Phytochemicals are responsible for numerous pharmacological activities.



Flower in Stage

Fruiting in Stage



Mature Fruit Stage

Seeds of *Cephalandra indica*

**Fig 1:** Different Stages of *Cephalandra indica*

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## 2. History and Distribution

*Cephalandra indica* is native from Africa and Asia including India, Indonesia, China, Malaysia, Philippines, Eastern Papua, Guinea, Vietnam and Northern territories. In India this plant grows in large quantities and widely distributed from upper genetic plains to Andhra Pradesh, Tamil Nadu, Kerala and Lakshadweep. Traditionally *C. Indica* is useful for various diseases.

## 3. Botanical Description

*Cephalandra indica* belonging to family cucurbitaceae, generally known as ivy gourd/little gourd in English, Sanskrit kundika, Assam kawabhatari, Bengal bimbu, Hindi kundaru ki bel, Kundru, Punjab kanduri, Tamil kovai, Urdu kunduru, Gujarat ghilodi, Telugu dondakaya, Malayalam kundru, Oriya kunduri, Marathi tondli, tindora. *Cephalandra indica* is traditionally used in various diseases like psoriasis, ringworm, itching, small pox, skin diseases, ulcer, scabies, diabetes, asthma, bronchitis, Dysentery, vomiting, cough and cold<sup>[6]</sup>. This plant roots are break with a fibrous fracture and flexible, the fresh root is long tapering, thick, tuberous more or less tortones with a few fibrous rootlets attached to it. Parenchyma is full of starch grains and through permeation of parenchyma with vascular elements is observed<sup>[7]</sup>.

This plant leaves either pentagonal or triangular in shape. The leaves arranged alternatively along the stem. The lower surface of the leaf is hairy while upper surface is hairless. Leaves are pale green underneath and bright green upper surface, with astringent taste and subflashy, palmately five lobed with obtuse apex<sup>[8-11]</sup>. *Cephalandra indica* fruits are fusiform ellipsoid, slightly beaked 2.5 to 5 by 1.3 to 2.5 cm marked when immature with white streaks, bright scarlet when fully ripened. This plant seeds are slightly papillose, yellowish green, much compressed and ovoid rounded at the apex<sup>[12]</sup>. *C. Indica* flowers are star shaped, large and white, rarely in axillary clusters of three pedicel 50.0 mm long, solitary and monoecious, hypanthium 15.0 mm long, ovate, corolla lobe white, each flower has three stamens<sup>[13]</sup> the plant is used as a laxative and used internally in the treatment of gonorrhoea. Aqueous and ethanolic extracts of the plant have shown hypoglycaemic principles<sup>[14-16]</sup>. In Homoeopathy to treat diabetic purpose.

## 4. Phytochemical studies

Phyto is the Greek word for plant. There are many families of Phytochemical and they help the human body in a variety of ways. This may protect from a host of disease. *Cephalandra indica* roots contain flavonoid glycoside ombuin 3 arabinofuranoside, Triterpenoid, saponin coccinoside – k, stigmast – 7 –en 3-one, Lupeol, Beta amyryl and beta sitosterol and whole plant is contain aspartic acid, glutamic acid, asparagines, tyrosine, Histidine, phenylalanine and threonine valine arginine. This plant fruits contain taraxerone, taraxerol and ethylcholest -5-en-3beta glucoside, carotene lycopene cryptoxanthin and apo 6 lycopenal, beta sitosterol and taraxero. Stem and leaves contain beta sitosterol, cephalandrol, cephalandrine A&B, Heptacosane, this aerial part contain heptacosane, cephalandrol, beta sitosterol alkaloids cephalandrine A and cephalandrine B.

## 5. Pharmacological studies

### 5.1 Antidiabetic activity

Ghose in 1952 introduced this medicine in Homoeopathy

through proving and gave few case reports about its usefulness in the treatment of diabetes mellitus in mother tincture. The study concluded that continuous administration of *C. indica* reduces the increased level of serum lipids secondary to the diabetic state<sup>[17, 18]</sup>.

A study shows that the aqueous methanolic extract of root of *musa paradisiacal* and leaf of *C. indica* in separate as well as in mixture shows antihyperglycemic activity of diabetic rats<sup>[19]</sup>. A study has been organized to evaluate the anti diabetic activity of methanolic polyherbal extract of *Cephalandra indica* leaves in diabetic rats. This study result showed that the polyherbal extracts of leaves of this plant shows distinct anti diabetic property.

A study has been conducted to increase the effect of aqueous and cold extracts of *C. indica* leaves on levels in streptozotocin induced diabetic rats<sup>[20]</sup>.

### 5.2 Anti inflammatory and analgesic activity

The leaves extract of the *C. indica* shows anti inflammatory and analgesic activity. Effect a significant reduction in hyperpyrexia in rats. Over all the study established that aqueous extract of *Cephalandra indica* possess marked anti inflammatory activity, analgesic and antipyretic activity<sup>[21]</sup>.

### 5.3 Antibacterial activity

The leaves of *Cephalandra indica* in aqueous and organic solvent extract showed effective antibacterial activity against the salmonella typhimurium, Pseudomonas aeruginosa, Bacillus subtilis, Staphylococcus epidermidis and Enterobacter aerogenes by broth dilution method and agar well diffusion method<sup>[22]</sup>.

### 5.4 Hepatoprotective activity

A study was organized to evaluate the hepatoprotective activity of diethylether extract of leaves of *Cephalandra indica* against. Liver toxicity induced by carbon tetrachloride in rats. The results provide that at a dose of 400 mg/kg body weight the *Cephalandra indica* leaves shows hepatoprotective activity and it was comparable with silymarin a standard hepatoprotective at 125mg/kg body weight<sup>[23]</sup>.

### 5.5 Anti Hyperlipidemic activity

The leaves extract of *Cephalandra indica* grandis exhibit C60 polyprenol significantly decreased serum triglyceride, glycerol and cholesterol and in high fat diet fed dyslipidemic hamsters at a dose of 50 mg/kg body weight. According to this study the leaves of this plant contain polyprenol exhibit marked anti dyslipidemic activity<sup>[24]</sup>.

### 5.6 Antiulcerogenic activity

The effect of methanol and aqueous extract of *C. indica* leaves on gastric ulcer induced by aspirin in rats were investigated. This plant leaf powder showed marked increase in mucus secretion with marked decrease in ulcer index and decrease in level of SOD and LPO activity. The result showed that the *C. indica* possess anti ulcerogenic activity due to increase mucus secretion and antioxidant action<sup>[25]</sup>.

## 6. Conclusion

*Cephalandra indica* is widely prescribed for the treatment of Diabetes in Homoeopathy and Ayurveda system of medicine. Even fruits of the plant are consumed as

vegetable in many parts of south India and North India. The whole plant is also used traditionally in the treatment of various ailments. Till date 26 constituents have been isolated from various parts of the plant.

The plants are evaluated exhaustively for various pharmacological activities and reported to possess anti-inflammatory, anti obesity, antifungal, anti stress, anti diabetic, wound healing and fertility inducing activity. *Cephalandra indica* safe anti diabetic property because proved the insulin stimulatory effect of this plant leaves from existing Beta cells in diabetic rats. Finally *Cephalandra indica* is a safe drug in various ailments.

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