



Mini Review



## Phyto-therapeutic Significance of Karaunda

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### GENERAL INTRODUCTION

*Carissa Carandas* Linn. (Karaunda) is a widely used medicinal plant by tribals throughout India and popular in various indigenous system of medicine like Ayurveda, Unani and Homoeopathy. All parts of the plant are used in traditional medicine. Traditionally the plant has been used in the treatment of scabies, intestinal worms, pruritus, biliousness and also used as antiscorbutic, anthelmintic. The notable biological activities reported are analgesic, anti inflammatory, anti pyretic, cardiotoxic and histamine releasing. The plant is also an alternative source of oil, hydrocarbon and phytochemicals.. Medicinal plants are a major source of biodynamic compounds of therapeutic values and are basis of many traditional medicines throughout the world for thousands of years. Herbal medicine is still the mainstay of about 75–80% of the world population, mainly in the developing countries for primary healthcare not because they are inexpensive but also for better cultural acceptability, better compatibility with the human body and minimal side effects. However among the estimated 250,000-400,000 plants species, only 6% have been studied for biological activity and about 15% have been investigated phytochemically. Karonda (*Carissa carandas*) is found in throughout India mainly in the semi-arid regions. Karonda tree is widely cultivated in the home gardens, farmer's fields and orchards as hedge plant. Karonda is commonly used as a condiment or additive to Indian pickles and spices. It is a very hardy, drought-tolerant plant that thrives well in a wide range of soils [1-4].

### DESCRIPTION OF KARAUNDA TREE

Karonda (*Carissa carandas*) is an evergreen deciduous small to big shrub usually 2-4 m tall . The stem is rich in white latex and the branches contain sharp spines . Flowers are small, measuring 3-5 cm in diameter, with white colour. The fruit is a berry, which is formed in clusters of 3-10 fruits. The fruit is globose to broad ovoid in shape and contains many seeds. Young fruits are pinkish white and become red to dark purple when ripe. Ripe fruit color vary from white, green and pinkish red depending on the genotype. Flowering starts in the month of January-February and fruits mature in May-June. Fruits are generally harvested at immature stage for vegetable purpose, fully ripen fruits are consumed fresh or processed. Leaves and flowers of Karonda tree Fruits of Karonda tree Leaves: The leaves are oblong and conical, 4-6 inch long and 2-3 inch wide, green on the top and brown below.

Flowers : White or yellowish flowers are found in groups.

Fruit: The are aoid with 5-1 hard angles curving upwards, glabrous with five to seven wings, woody and fibrous.

Bark: The bark is smooth gray. The bark is thick, soft and of red color from inside..

### CULTIVATION

Karaunda is a very hardy and drought tolerant plant, it thrives well throughout the tropical and subtropical climates. Heavy rainfall and waterlogged conditions are not desirable. It can be grown on a wide range of soils including saline and sodic soils.

Karaunda is commonly grown from seeds. Vegetative methods—air-layering and stem (hard wood) cuttings are feasible but not very common. Fresh seeds are sown in nursery during august – September. One- year old seedlings are transplanted. Air- layering is very successful in Karaunda. It

can be performed in the beginning of the monsoon. Rooted layers can be separated 3 months after layering.

Manuring and fertilization: Karaunda plants grown as protective hedge are hardly manured or fertilized. Manuring, however used as 10-15 kg well-rotten farmyard manure or compost/plant and should be applied before flowering.

Irrigation: Water requirement of Karonda is very low. Irrigation after planting and manuring is essential. Plantation once established does not need much water.

Storage: The fruits ripen from July to September in north India. Karaunda fruits mature 100-110 days after fruit set. At this stage fruits develop their natural colour. Fruits ripen after this stage, taking about 120 days (after fruit set) when they become soft and attain dark purple/maroon/ red colour. After packing of fruits, they are kept in shade. Fruits harvested at maturity, can be stored for a week at room temperature. Fruits can be preserved / stored for 6 months in SO<sub>2</sub> solution (2,000ppm)[5-9].

## HISTORY

Karonda is native to the Indian subcontinent, Myanmar, Malacca and Sri Lanka, and was introduced to Java where it now runs wild. *Carissa grandiflora* is a close relation of Karonda, and this is called the Natal plum and Hedge Thorn.

## PHYTOCHEMICAL CONSTITUENTS

The roots of *C.congesta* have Volatile principles including 2-acetyl phenol, Lignan , carinol from root of *C.congesta* sesqui terpenes , namely carissone and carindone. The leaves were reported to have triterpenoid constitutes well as tannins, and a new isomer of urosolic acid namely carissic acid was also found. Fruits of this plant were reported to contain a mixture of volatile constituents including 2-phenyl ethanol, linalool,  $\beta$ -caryophylline, isoamyl alcohol, benzyl acetate and a novel triterpenic alcohol, carissol. Enzymatic mild hydrolysis of polar glycoside from the plant yielded oderoside H, digitoxigenin and the sugars D-glucose and Ddigitalose. Moreover, *C.congesta* contains crude protein 13%, polyphenols 7.8%, fixed oil 5.3 % hydrocarbons 58 % and free acid 31.4 %. Higher gross heat values of this species indicate that it can be used as fuel source. Essential oil from *C.congesta* was found to contain coumarin[ 6-9] .

It has been reported that fresh leaves of *C.congesta* contain four pentacyclic triterpenoids including one new constituent carissin and two hitherto unreported compounds [10-13].

## KARONDA AS MEDICINAL TREE

The karonda fruit is an astringent, antiscorbutic and as a remedy for biliousness and useful for cure of anaemia. In traditional medicine the fruit is used to improve female libido and to remove worms from the intestinal tract. The fruits has anti-microbial and antifungal properties and its juice used to clean old wounds which have become infected. The fruit have an analgesic action as well as an anti-inflammatory one. The juice can be applied to the skin to relieve any skin problems. Traditionally Karonda has been used to treat anorexia and insanity.

A leaf decoction of Karonda is used against fever, diarrhoea, and earache. The roots serve as a stomachic, vermifuge, remedy for itches and insect repellent.

### Traditional medicinal uses of Karonda

Traditional healers of Chhattisgarh having expertise in treatment of different types of cancer from Karonda. They use its different plant parts to dress the cancerous wounds and to kill the maggots. To prepare the Karonda decoction, its roots, flowers, spines, leaves and fruits are mixed in equal proportion and crushed to make an aqueous paste. This paste is applied at very initial stages. This paste is boiled in water and when half quantity of water remains, the boiling is stopped and lukewarm decoction is used to wash the cancerous wounds. The healers claim that this decoction is having immense potential to heal the wound and make it infection free. In many ways, it acts in more promising ways than Neem (*Azadirachta indica*) plant parts. Many healers boil the aqueous paste in Sarson (Mustard seed) oil and when all watery contents evaporate, the boiling is stopped and special oil is used for wound dressing [12].

**Side effects:** Roots contain cardiac glycosides that can lower (slightly) blood pressure.

**Karonda other uses**

Karonda is good appetizer. Its regular in the cropping season, flushes out the intestinal worms. Karonda is used mainly used for making pickle, for making jelly, jam, squash, syrup and chutney. Ripe fruits exude a white latex when severed from the branch. The fruits have astringent properties and have been used for tanning and dyeing.

The ripe fruit emits a gummy latex when it is cooked, but yields a rich red juice which clears when it is cooled, so this is used a refreshing cooling drink in hot weather. It is also sometimes substituted for apples to make an apple tart, with cloves and sugar to flavor the fruit. Usually the fruit is pickled before it gets ripened. Ripe Karonda fruit contains high amount of pectin therefore it is also used in making jelly, jam, squash, syrup, tarts and chutney. The sweeter types may be eaten raw out-of-hand but the more acid ones are best stewed with plenty of sugar.

In Rajasthan karonda fruits are commonly cooked with green chillies to make a tasty dish taken with chapattis. Karonda jelly [12-14].

**KARUANDA BENEFITS**

The Karonda tree has many uses as it is used in traditional medicine, and modern medical research has found that it has many beneficial properties. Its leaves feed the tussar silkworm; the wood is used for making household utensils, such as large cooking spoons, and the root can be pounded to a paste to make insect repellent. The fruits have astringent properties and have been used for tanning and dyeing. The Karonda juice can be applied to the skin to relieve any skin problems. Histamine is emitted from the bruised roots. Traditionally Karonda has been used to treat anorexia and insanity. The stem is used to strengthen the tendons and the leaves contain the same triterpene acids as *Lantana camara* or Yellow Sage. It has anti-pyretic activities helpful in reducing fevers

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