

## Review Article

# A Brief Review on Healing Properties of *Varuna – Crataeva Nurvala*

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## ABSTRACT

Herbs are being used for maintain the health as well as for curing from many diseases from long years ago. Out from so many herbs there is one blessed plant *Varuna (Crataeva nurvala)* Buch - Ham of the family (*Capparidaceae*). This plant is discussed in almost all Ayurvedic texts as well as Modern *Materia medica* with many synonyms like three-leaved caper, ashmarighan, ajapa, triparna, etc. This plant is proved as world's best litholytic herb. Beside this main property it is being used extensively in various other medical conditions like thermoregulator, antiseptic, *shothhara* (anti-inflammatory), anti-oxidant (Rasayana), laxative and contraceptive, and it also has qualities to improve the kidney function as well as liver functions. Tree is found throughout the India. *Varuna* is rich in tannins, alkaloids, saponins, flavonoids and plant sterols. There are various research works done on bark of *varuna*, and it is found that lupeol is found in the bark of varun plant which can reduce the oxalates levels by deactivating the glycolate oxidase enzyme. Due to which oxalates cannot combine with calcium in blood and calci production decreases. It was concluded in *varunadigana* in *sushruta samhita*. By taking into consideration its great therapeutic value, this review is done to gain the knowledge on different healing aspects of *varuna* as this plant plays an important role in Ayurveda and in other health care system.

**KEYWORDS:** *Varuna, Crataeva nurvala*, Saponin, Litholytic, Renal stones

## INTRODUCTION

*Varuna (Crataeva nurvuala)* Buch-Ham), belonging to the family; *Capparidaceae*. It is a green tree found particularly in India.<sup>[1]</sup> This is an important plant in Ayurveda due to its effectiveness in a wide range of diseases. All parts of the plant are used to cure various kind of diseases. There are almost 70 species of the plants and they all are found mainly in semiarid (tropical) regions of India. But *Crataeva nurvuala* can be found commonly in India near temples and rivers. It is considered to be rich of phytochemical constituents like saponins and tannins. Vedic literature describe its action as *Rakat shodhak* (blood purifier) and thermoregulation.<sup>[2]</sup> The bark of plant is *Tikata Madhura* in *rasa, ushan virya*, expectorant, anthelmintic, digestive, laxative, and anti-pyretic.<sup>[3]</sup> Its pharmacological studies reveals that extract of this plant as well as its active constituent lupeol is diuretic in nature, having anti-inflammatory, hepato-protective, lithotropic, , antioxidant, cardio-protective, anti-rheumatic, contraceptive, and anti-septic.<sup>[4]</sup> It is a small attempt to compile all information about the plant with classical references and research work with aspect to *Crataeva nurvuala*.

## TAXONOMY:

The *crataeva* is named in respect of the Greek botanist *Crataevas*. It encompasses of near about 70 different species. Among all of them *Crataeva nurvuala* is found in abundance in India.<sup>[5]</sup> The taxonomical classification of *C. nurvuala* is as follows:

Kingdom: Plantae

Order: Brassicales

Family: Capparidaceae

Genus: *Crataeva*

Species: *nurvala* (Buch-Ham)

**VERNACULAR NAMES:**

It is commonly named as “*Varana*”.

Sanskrit name: *Ajapa, Asmaryaghna, Barhapushpa, Mahakapittha, Triparna, Sadhubriksha, Sikhimandal, Shvetadru, Tamal, Urumana, Vasaha, Tikta saka, Setu briksh, Kumarak, Saka druma, Tamalaka, Sweta puspa;*

Hindi: Baruna, Barna, Bila

Bengali: Barun Tiktoshak

English: Three-leaved caper, Holy garlic pear, Langam tree

Kannada: Adhiraaja, Naaram bele, Vitasi

Malyalam: Kili, Nirmatalam,

Marathi: Nirvala, Varun, Vaayuvana

Tamil: Maralingam

Punjabi: Barna

Telgu: Ulimeri chettu <sup>[6]</sup>

**HABITAT**

Varuna basically belongs to India and Bangladesh near the temples. It is a medium sized tree, often cultivated in the sub alpine zones along along the streams and riverbanks. It is found abundantly in Tamil Nadu Madhya Pradesh, Bengal, Kerala and Assam.

**CLASSICAL REFERENCES:**

*Charaka Samhita*, it is mentioned in *mahakashaya varga* <sup>[7]</sup>

*Sushrut Samhita* quoted under *varunadi gana* which is used for the treatment of *Asmari* and *Mutrakrichha*. <sup>[8]</sup>

*Ashtang Hrideya Vagbhatta* has placed it in *varunadi gana*. <sup>[9]</sup>

Out of these *brihtrayi samhitas* description of *Varuna* is found in almost all the *nighantus*.

*Bhav parkash & Madanpal nighantu* describe it under *Vatadi varga*.

*Raj nighantu* included it under *pravadradi varga*,

*Nighantu adarasha* has mentioned it under *Kariradi varga*.

*Dhanvantri nighantu & Sodhala nighantu* included under *Amradi varga*.

*Kaiydev nighantu* under *Oushadhi varga & Priya nighantu* has mentioned it under *Haritakayadi varga* <sup>[10]</sup>

**BOTANICAL DESCRIPTION** <sup>[11]</sup>

*Crataeva nurvuala Ham.* is medium sized tree with a multi branched head. It has a height of 25-50 meters.

**Leaves:** About 8-12 cm long with oval leaflets. Nature is trifoliate or *triparna*, petioles

**Flowers:** There are many in number, glabrous. Sepals petaloid, small, distant, ovate, acute.

Petals are long, very narrow. Stamen are longer than petals. Gynophores nearly 5 cm long, terete, smooth. Ovary ellipsoid; Stigma flat. White in colour that's why called as *Sweta pushpa*.

**Fruit:** Ovoid, wood like appearance, smooth.

**Seeds:** Embedded in the pulp which is yellow in colour.

**Bark:** It is grey – white and the outer surface of bark is wrinkled.

**Distribution:** All over India, Burma, Sub-Himalayan tracts.



**Figure 1. Flower and leaves of *Crataeva nurvuala***

#### **AYURVEDIC PROPERTIES OF PHARMACOLOGICAL EFFECT**

According to **Ayurvedic literature**, *Varun* is *Tikta* (bitter) & *Kashay* (astringent) *Rasa* (taste); *Laghu* (light) & *Rukshya* (non-unctuousness) in *Guna* (properties); *Ushna* (hotness) in *Virya* (potency) and *Katu* (pungent) in *Vipak* (metabolism)<sup>[12]</sup>

According to **Raj nighantu** *Varun* is *Katu* (pungent) in taste & *Ushna* (hotness) in *Virya* (potency); *Snigdha* (unctuousness) *Guna* (properties). It is used as strong blood purifier and appetizer. It is also used for the healing of wounds.<sup>[13]</sup>

According to **Bhav prakash nighantu**, *Varun* enhances *Pitta*, soften and expels hardened faeces, cures the diseases of *Kapha* and *Vata*, suppresses difficulty in micturition and urolithiasis. It mitigates intestinal growths, *Vata* and *Rakta* disease.

*Varun* is an appetizer, astringent, sweet, bitter and pungent in taste, hot in potency, drying and light in action.<sup>[14]</sup>

#### **TRADITIONAL USES AND ETHANO-PHARMACOLOGY**

In Ayurveda the *varuna* plant is being used in renal stones, for the elimination of waste and respiratory problems, pyrexia and different types of arthritis. It promote the wound healing and enhance the immune system by working as rasayana<sup>[15]</sup>

In Unani system of medicine, the stem bark of *varuna* is used to aid the digestion process.<sup>[16]</sup>

In tribal areas, the bark is used to treat urinary tract disorders, anti-emetic and as anti-dote of snake bite.<sup>[17]</sup>

Some villagers of Tamil Nadu, India, use the bark and leaves of *varuna* plant to control birth.  
[18]

Flowers are astringent in nature.

The fruit is sweet and oily, and having laxative properties.

**PHYTOCHEMISTRY**

**Table 1**

**Phytoconstituents of *Crataeva nurvuala***

<b>Chemical nature</b>	<b>Example</b>	<b>Specific Parts</b>
Alkaloids	Cadabicine, Cadabicine diacetate	Bark of stem
Saponins	Diosgenin	Bark of stem [19]
Tannin	(-)Epiarzelechin,(-) Epiarzelechin-S-O-β-Dglucoside & Catechin	Bark of stem, root bark
Flavonoids	Rutin, Quercetin, Isoquercetin	Bark of stem
Glycosinolates	6-C-Glycopyranosyl luteolin, Glucocapparin	Leaves
Phytosterols	Spinasterol acetate, Taraxasterol, Cetyl alcohol, Fagarasterol	Bark of stem, root bark [20]
Triperpene	Varunol ,Lupenol, Lupenone, β-Sitosterol, , Betulinic acid, 3-Epilupenol and, Phragmalin triacetate	Bark of stem, root bark [21]

**THERAPUTIC USES**

**BARK:**

- In *Vidradhi* and *Gandamala*, a decoction is prepared with the bark of *Varun* and given with honey. [22]
- The decoction of bark is highly effective against painful-micturition. [22]
- *Varun* bark decoction along with *Apamarg*, *Punarnava*, *Yavakshara*, *Gokhura* and *Yastimadhu* useful in Diabetes, Painful bladder, Urolithiasis and any other urinary tract diseases [22].
- The bark act as appetizer, cause less secretion of the bile and phlegm, and removes the urinary tract issues. (*Yunani*). [23]
- A decoction prepared by taking equal quantity of *Varun twak*, *Sonth*, *Gokshur* and mix with *Yavakshara* and *Jaggery (Gud)* given for the treatment of Urolithiasis. [24]
- Decoction of *Varun twak* ,dry zinger (*Sonth*), *Arani* (Agneemanth), *Pasanabheda*, *Sahijana*, *Gokhura*, *Amaltasa* added with *Hingu*, *Yavakshara* and *Saindhav namak* given for the treatment of urolithiasis and painful micturition. [24]
- In *Vataja Asmari*, *Sneha paka* of *Varun twak*, *Pasanaveda*, *Agastya*, *Satavari*, *Asmantaka*, *Gokshuru*, *Kachanar*, *Yava*, *Kulathi* etc. are given. [24]
- “*Varunadya Ghrita*” given for the treatment of *Kaphaja Asmari*. [24]
- In *Vyanga* the stem bark of *Varun* is applied externally with goat milk. (C.D) [25].

**ROOT BARK:**

- Kalka or paste of roots is used externally on *gandamala*.<sup>[22]</sup>
- Decoction of root bark of *Varun* given for the treatment of Urolithiasis.<sup>[22]</sup>

**LEAVES:**

- The cold infusion (Phanta) prepared with fresh leaves of *varun* given in *Udarasula* (Painful abdomen).<sup>[22]</sup>
- The fresh leaves are given to eat for reducing the *meda* (Fats) from the body.<sup>[22]</sup>
- The bark and the leaves are equally useless in antidotal treatment of snake bite.<sup>[23]</sup>
- In *Kikkisa*, first the suprapubic area is rubbed with dried cow-dung and then anointed with the paste of *Varun* leaves.<sup>[25]</sup>

**FLOWERS:**

The flowers are considered as *Grahi & Pittarechak*.<sup>[22]</sup>

**PHAMCOLOGICAL ACTIVITY (IN-VITRO & IN-VIVO)**

Various evidences of research works conducted on this plant on different kind of disorders are found. Following table shows the research activities done by using different parts of plants on various disorders:

Action	Model	Part of plant	Research work	Reference
Urolithiasis	Rats(in-vivo)	Outer bark of stem, in extract of ethanol	a) Lowering the intensity of cellular infiltration in renal tubule. b) Reducing the oxalate level of renal tissues.	[27] [28]
		Extract of ethanol	Significant reduction of Hexauronic acid in blood.	[29]
		Bark of stem, in extract of ethanol	Reduced level of crystal and its deposition in the kidneys	[30]
		Powder of stem bark powder	Decrease in urinary enzyme levels	[31]
	Human(in-vivo)	Bark of stem and root bark powder	Work to alter the pHlevel in the renal tubules	[32]
Urinary tract infections	Rats(in-vivo)	Aqueous extract of <i>varuna</i> stem bark in polyherbal formulation having	Cause diuresis and increase the level of urinary electrolytes	[33]
	Human(in-vivo)	Outer bark of stem & Root bark powder	Anti-inflammatory	[34]

BPH	Human (in-vivo)	Herbal formulation contain varuna plant	Improve the urine output and decrease size of prostate gland in the ultrasound.	[35]
Hepatoprotective activity	Rats(in-vivo)	Lupeol	Work as antioxidant by increasing the antioxidant enzymes and decrease in the level of Lipid peroxidase in liver	[36] [37]
Anti-arthritis activity	Rats(in-vitro)	Ethanol extract	Prostaglandin synthase inhibitor activity	[38]
		Stem bark powder	Decrease inflammation & complement activity	[39]
		Lupeol & its extract	Glucosaminoglycans level decreases which enhances membrane stabilization	[40]
Cardioprotective activity	Rats(in-vitro)	Lupeol & its extract	Increase the action in cardiac tissue.	[41]
Diabetes mellitus	Rats(in-vivo)	Ethanol extract & Petroleum ether extract	From $\beta$ -cells of pancreas secretion insulin increases	[42]
Contraceptive	Rats(in-vivo)	Ethanol as well as Aqueous extract	Can modify the activity of oestrogens by disrupting the luteotropic activity of the blastocyst	[43]
Anti-cancer	Rats(in-vitro)	Lupeol	Topical application prevents DNA damage in skin.	[44]

**CLASSICAL AYURVEDIC PREPARATIONS**

**Varunadi Kwath-** Useful in various conditions of Kidneys and urine flow like crushing of renal calculi, preventing urinary tract infections, cure burning micturition, nephritis, prostatitis, Dysurea, Improves the BPH etc

**Varun Powder:** Treatment of worm infestations

**Varunadi ghrita-** Recommended for massage in arthritis, obesity

**Varunadya taila-** Recommended for various skin disorders.

**Chandarprbhavati:** Used as Rasayan

**CONCLUSION:**

Since from ancient time *Crataeva nurvala* is being used for the treatment of various diseases like urolithiasis (*Ashmari vedan*), lymph adenitis (*Gandamala nasan*) etc. It has diuretic, anti-malarial, antipyretic, hepato-protective, anti-diabetic activities. Various parts of this plants such

as bark, decoction is used for painful micturition, leaves to reduce the body fat, and flowers as *grahi & pittarecheka*. Although various components which are responsible for various pharmacological actions seem to have been determined but still molecular mechanism of various actions is unknown like contraceptive action of bark extract of *Crataeva nurvala*. This paper is a small effort to provide up to date information highlighting the research work done already. So more research work on *crataeva nurvala* on the hidden areas like contraceptive, weight management etc. should be performed so that new therapeutic drugs as well as dosage forms can be established for the benefit of mankind.

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