



# A CRITICAL REVIEW ON POISONING OF KUCHALA IN AGADTANTRA

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## ABSTRACT

The study of poisons is included in the Asthang Ayurvedic field of Agada Tantra, or toxicology. In Indian medicine, kuchala (*Strychnous nuxvomica* Linn.) is a well-known toxic herb with several health benefits. It is explained in Sushruta's Surasadi gana and Bhavprakasa's Amradi phala varga. This deciduous tree is found all over India's tropical regions and is widely distributed there. It is known as Upavisha in Ayurveda and has been a widely utilized remedy since ancient times. Kuchala's primary constituent is strychnine. Studies have documented its neuropharmacological, hepatoprotective, anti-inflammatory, anti-allergic, antimicrobial, anticancer, antipyretic, gastroprotective, antidiabetic, antialcoholic, and antioxidant qualities. Despite being regarded as a highly toxic plant, it possesses a vast array of therapeutic benefits. Ayurveda describes kupulu as a hazardous plant, hence before administering it, certain shodhan procedures for the seeds are thought to be necessary.

**KEYWORDS:** Poison Plant, Kuchala, *Strychnous Nux-Vomica*.

## Introduction:-

Ayurveda Acharyas believe that even a poisonous drug can be advantageous and provide more therapeutic benefits if it is properly administered, and similarly a medicinal plant or a drug, if not administered properly may act like a poison. <sup>[1]</sup> In Ayurvedic literature Upavisha are the group of drugs which were less toxic in nature and not so lethal but produce certain toxic symptoms on consumption or administration. They are having less toxic potency.<sup>[2]</sup> Though the plant Kuchala is described under the 'Upavisha varga' (sub poisonous group) its seeds have been used successfully in different formulations for different diseases after proper Shodhan Sanskar (processing of purification). Strychnine is a main content of Kuchala is popular in folk medicine from ancient period. Kuchala is also known as Kupilu or Kuchila that is a poisonous deciduous tree as per ancient texts. <sup>[3]</sup> These herbs have been used in various formulations of Ayurveda in the management of diseases. The kuchala seeds are mainly used as Appetizer, Anti-periodic, Digestive, Purgative, and Stimulant. It's also used in Anemia, Asthma, Bronchitis, and Intermittent and malarial fever. Many Ayurveda medicinal formulations like Agnitundirasa, Laxmivilasarasa, Shulnirmulanarasa, Suptivaatarirasa, Vishatinduka<sup>[4]</sup> contains Kuchala beej as their basic ingredient.

## CLASSIFICATION:

Botanical Name– Strychnous nuxvomica Family– Loganiaceous, Karaskara Kula

Synonyms- Kupeelu, Kuchala, Kakatundika, Kakapiluka, Karaskarav isha-tinduka

Ayurveda: Sthavara Vanaspatik vish ,Upavisha<sup>[5]</sup> phala visha(beeja visha)

Modern medicine: Neurotoxin spinal excitant poison<sup>[6]</sup>

## AYURVEDIC PROPERTIES: <sup>[7]</sup>

1. Rasa: -Katu Tikta
2. Guna: -Rruksha, Laghu, Teekshna,
3. Veerya: -Ushna,
4. Vipaka: -Katu
5. Doshaghanata: Kaphavatshamak ,Kaphapittanashanam
6. Rogghnata: Sandhivata, Amavata, Vrana, Kushatha, Nadishoola, Ardhangha, Gatibhransha, Gyanabhransha, Peshiposha ,Kampa, Badhirya, Ardita, Pakshaghata, Andria, Amadya, Amashyastha, Amadosha, Grahani, Udarshoola, Arsha, Krimi, Raktavikara, Vatarakta, Hridayashaithilaya, Hridayodara, Kasa, Phuphusshotha, Dhvajabhangha, Sheeghrapatana, Daurbalya, Kushtha, Kandu, Atisweda

,Vishamajwara,Visuchika.

7. Karma: Shothahara, Puthihara,Vedanasthapana, Uttejaka ,Nadibalya, Deepana, Pachana, Grahi, Shoolprashamana, Hridyottejaka, Kaphaghna, Kasahara, Vajikarna, Balya, Katupaustika, Kushthagha, Kandughana,Swedapnayan.

### Fatal dose

- Strychnine: 15-50mg (1-2mg/kg body wt).
- 1 crushed seed.

**Fatal period:** 1-2 hrs

### Uses –<sup>[8]</sup>

- Hanti Meda – lowers cholesterol, useful in obesity
- Krumihara – useful in intestinal worm infestation
- Shvasahara – useful in asthma and wheezing
- Gulmahara – useful in abdominal tumor, bloating
- Arshohara – useful in hemorrhoids
- Mushikavishahara – useful in rat bite
- Vishtambhi – causes constipation
- Rochana – improves taste, useful in anorexia
- Agnikrut – improves digestion strength
- Grahi – absorbent, useful in diarrhea
- Kushtahara – useful in skin disorders
- Pramehajit – useful in urinary disorders, diabetes

## CHEMICAL COMPOSITION

The dried seeds of *Nux vomica* contain 2.6%- 3% total alkaloids, out of which 1.25%-1.5% is strychnine, 1.7% is brucine, and the rest are vomicine and igasurine.<sup>[9]</sup> Some other minor alkaloids are  $\alpha$ -colubrine,  $\beta$ -colubrine, 3-methoxycajine, protostrychnine, novacine, n- oxystrychnine, pseudostrychnine, isostrychnine, chlorogenic acid, and glycoside.<sup>[10]</sup>

## SODHANA

Seeds of Kuchala are dried and soaked in cow's milk overnight for 20 hours and then with the help of a knife, its outer covering is scrapped and removed. Then it is cut into small pieces and boiled in cow milk for three days (about four hour each day). At the end of each days bowling, it is warmed with warm water and dried before use in subsequent days. After three days it is dried under shade and fried with cow's ghee to be used as therapeutic agent.

[11]

## Important Formulations or Yogas [12,13,14]

- Maha Vishagarbha Taila
- Ekanggavira Rasa
- Vishatinduka Vati
- Krimimudgara Rasa
- Navajeevanrasa
- Agnitundirasa
- Laxmivilasarasa
- Shulnirmulanarasa
- Suptivaatarirasa
- Vishatinduka Taila



## PART USED [15]-

Seed is the most used part of this herb. Rarely, root bark is also used. It should be purified before using for medicinal purposes.

## TOXIC SYMPTOMS<sup>[16]</sup> –

1. Twitching and stiffness of muscles of
2. Bitter taste
3. face and neck Muscles became rigid and stiff,
4. Any stimulus like movements of patient, noise, touch, light or water immediately produces convulsions.
5. Convulsions- initially clonic i.e.intermittent and then tonici.e.sustained.
6. Body is thrown in to the form of arch Blood stained froth atnose and mouth
7. Cyanosis
8. Mind remains clear till end
9. Eyes :-prominent and staring, with dilated pupils
10. Death is painful

## Treatment

There is no antidote for strychnine poisoning.

\* Continue to have a clean airway and enough breathing.

Control seizures: in a pitch-black, noise- and disturbance-free environment. The first line of treatment for strychnine-induced muscle hyperactivity is still benzodiazepines. IV 0.1–0.5 mg/kg of diazepam gradually. General anesthetics and/or muscle relaxants, such as gallamine, should be used if they prove ineffective.

\* Antidotes, such as sodium amytal or pentobarbital sodium (barbiturates), are administered intravenously at a dose of 300– 600 mg.

\* If there are no convulsions, cautious gastric lavage with KMnO<sub>4</sub> may be performed. One hour after intake, strychnine is given to activated charcoal in order to absorb it and decrease its absorption. Active cooling techniques such as ice water immersion, cooling blankets or mists, and fans are used to treat hyperthermia.

- Symptomatic treatment.

## POST MORTEM APPEARANCE:<sup>[17]</sup>

1. Rigid attitudes characteristic of the clinical state may persist for a long time after death.
2. There may be oozing and hemorrhages are usually present in muscles
3. As in death following any violent muscular activity, the lymphatic thoracic duct is bloody
4. The spasm of the muscles interferes with respiration and causes death from asphyxia
5. Early onset and disappearance of rigor mortis.
6. Postmortem calorificity
7. Dilated pupils.

## Medico-legal Aspects

- One of the most deadly poisons. Death is usually accidental due to overdose, quack remedies and poison mistaken for some other harmless drug, or in children eating the seeds.
- It is used as an aphrodisiac, as cattle and arrow poison and to kill dogs and rats.<sup>[18]</sup>

**DISCUSSION:** Kuchala is a well known spinal poison to modern science. It is used in Ayurvedic pharmacopeia from ancient period. Ayurveda texts like Rasatarangini, Rasratnasamucchaya, Raj-Nighantu, and Bhavprakasha mentioned detail description of the plant, basic properties,

therapeutic uses, medicinal preparations. Some Ayurveda texts like Bruhat- Trayi (3 basic granthas of Ayurveda i.e. Charaka Samhita, Sushrut Samhita and Vagbhata

Samhita) and Dhanvantari Nighantu did not mention Kuchala.

Even in Kalpasthana Sushruta described types of

visha according to adhithana (a part of plant where poison resides), among it he includes fala visha (poisonous fruits), but

he didn't mention in it. Due to some properties like Ashukaritwa, Ushna, Teekshna vish dravya get spread rapidly in the body. So for the quick action of medicines many Ayurvedic formulations contain these vishadravyas like Kuchala as their ingredient. By utilizing these properties of vishadravyas medicines can be made more effective. So we found that many Rasashastra based texts are having description of poisonous drugs like Kuchala in detail.

Rasatarangini stated the detoxification process of Kuchala, so that purified Kuchala can get used in medicinal

formulations. Modern toxicology includes it in a deadly poison. It is categorized as Neurotoxin spinal excitant poison. Medico legally this plant is important too.



Homicidal Death due to Kuchala is uncommon because of bitter taste, dramatic symptoms and easy detectability

in body fluids and tissues. Accidental poisoning is common among children. Homeopathy also mentions many

therapeutic uses of Kuchala. In homeopathic material medica Nuxvomica is mentioned as laxative, Digestive,

Increasing vigor and vitality in male and also useful in alcoholism.

## CONCLUSION:

Kuchala (strychnous nuxvomica Linn) is one of the deadly poisons known to mankind. Though it is poison, it is

important part of Ayurvedic and Homeopathy pharmacopeia. It is a basic ingredient of many ayurveda formulations.

Due to properties like Ashukaritwa, Ushna, Teekshna vish dravyalike Kuchala get spread rapidly in the body. So for the

quick action they are used in medicinal formulations of Indian system of medicine and other systems.

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