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AYURVEDIC APPROACH OF *KUCHALA* IN *AGADTANTRA*

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ABSTRACT:

Kuchala (strychnous nuxvomica Linn) is a well known poisonous plant in Indian system of medicine. It is included in *Upavisha* by *ayurveda* texts. Strychinine nux vomica lin is a popular folk medicine from ancient times. Even today also many people in ruler India use *Kuchala* in medicine form. According to *achryas* even an acute poison can become an excellent drug if it is properly administered, and similarly even a drug, if not properly administered, becomes an acute poison. *Kuchala* is a known vegetable poison to *Ayurveda* as well as modern science but it is used in many medicinal preparations of *Ayurveda* and other allied medicinal pathies. Strychnine is a main contain of *kuchala* which was first used medically in 1540, and continued to be used in many stimulants, Tonics and cathartics. In this article the overall information about the poisonous plant *Kuchala*, it's, Toxicological aspect, Medicolegal aspect and therapeutic uses mentioned in *Ayurveda*, *Agadatantra* and in other systems of medicine.

Keywords: *Kuchala*, Strychinine nux vomica, *Upavisha*, *Agadatantra*

INTRODUCTION:

Kuchala (strychnous nuxvomica Linn), a well known plant in Indian system of medicine is being used extensively in different classical formulations with great therapeutic significance. It has been stated categorically that strong poisons could be the best medicine, if it is used after proper detoxification (*shodhana*), in proper therapeutic dose and formulation. On the contrary, a good medicine may affect adversely unless it is used for proper person in proper dose[1]. *Rasratnasamucchaya* described eleven number of *Upavisha*[2]. 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[3] .Though the plant *Kuchala* is described under the '*Upavisha* varga' (sub poisonous group) its seeds have been used successfully in different formulations to combat different diseases after proper *Shodhan sanskar* (processing of purification). Strychnine is a main content of *Kuchala* is popular in folk medicine from ancient period. Nuxvomica was introduced in Europe in the sixteenth century, but was not used in medicine. This alkaloid strychnine has been in use as a rodenticide at that time .It is sometime used for killing stray dogs hence the name dog buttons is used for it, being chiefly employed to poison dogs, cats, crows etc. Strychnine was first used medically in 1540 and continued to be used in many stimulants Tonics and cathartics until as recently as the 1960s.[4] The seeds are mainly used as Aphrodisiac, Appetizer, Anti-periodic, Digestive, Purgative, and Stimulant. It's also used in Anemia, Asthma, Bronchitis, and Intermittent and malarial fever. Physicians of *ayurveda* successfully employed this drug & preparations containing it in a number of diseases after proper purification. Many *Ayurveda* medicinal formulations like *Agnitundirasa, Laxmivilasarasa, Shulnirmulanarasa, Suptivaatarirasa, Vishatinduka*[5] contains *Kuchala beej* as their basic ingredient. This review article is a sincere attempt to summarize the information concerning about poisonous drug *Kuchala* (strychnous nuxvomica Linn) described in Indian system of medicine in respect to its literary, pharmacological activity, toxicological effects, and therapeutic uses in various systems of medicines including *Ayurveda*.

AIMS AND OBJECTIVES:

AIM: To review *ayurvedic* aspects of *kuchala* special reference to *Agadtantra*.

OBJECTIVES:

1. To review *ayurvedic* aspects of *kuchala*.
2. To classify *kuchala* according to the norms.
3. To identify properties and uses of *kuchala*.

SCIENTIFIC CLASSIFICATION[6]:

Classification of *kuchala* is given below in table no. 1.

Kingdom	Plantae
	Angiosperms
	Eudicots
	Asterids
Order	Gentianales
Family	Loganiaceae
Genus	Strychnos
Species	S. nuxvomica

Table no. 01

- **Botanical Name**– Strychnous nuxvomica
- **Family**–Loganiaceous, Karaskara Kula
- **Vernacular Names**[7]

  Hindi Name- *Kuchala*
  English Name- Nuxvomica
  Telugu Name- Mushini Ginjalu, Mushti Vittulu
  Bengali Name- Kunchila
  Marathi Name –Kajara
  Gujarati Name- Jherkuchala, Zerkochala
  Tamil Name- Yettikottai
  Malayalam Name- Kaajjeel
  Arabian Name – Ajaraki, Habbul Gurav
  Parsi Name – Kuchula, Phuloosemaahi

Sanskrit Synonyms[8]: Kuchelaka,kuchel, Kuchila, Kuchil, Vishatinduk, Tindu, Tinduk, Vishatinduk, Karaskara, Ramyafala, Kupaak, Vishamushtika, Vishamushti, Kaalkuta.

CLASSIFICATION:

1. Ayurveda: Sthavara Vanaspatik vish *Upavisha*[9] phala visha (beeja visha)

2. Modern medicine[10]: Neurotoxin spinal excitant poison[11]

3. Distribution[12]: It is found throughout tropical India up to an altitude of 360 m, in Uttar Pradesh, Bihar, Orissa, Coromandel Coast, Andhra Pradesh and Karnataka. It is most common in the forests along the western coasts.

4. Plant Description:[13] Plant is dense, hard white and close- grained. The branches are irregular and are covered with a smooth ashen bark. The young shoots are deep green color with a shiny coat. The leaves have an opposite arrangement, short stalked, are oval shaped, also have shiny coat and are smooth on both sides. The leaves are about 4 inches (10cm) long and 3 inches (7.6cm) wide. The flowers are small with a pale green color with a funnel shape. They bloom in the cold season with a smooth and have a foul smell. The fruit are about the size of a large apple with a smooth and hard shell which when ripened is a lovely orange color. The meat of the fruit is soft and white with a jelly like pulp containing five seeds covered with a soft woolly substance. The seeds are removed from the fruit when ripe. They are then cleaned, dried and sorted. The seeds have the shape of flattened disk completely covered with hairs radiating from the centre of the sides. This gives the seeds very characteristics sheen. The seeds are very hard, with a dark gray horny endosperm where the small embryo is housed that give off no odor but possess a very bitter taste. The plant is native to south East Asia and Australia normally in tropical and subtropical areas.

Figure no.1:

1. *Kuchala* (Strychnous nuxvomica) Tree
2. Leaves and Fruits
3. Seeds

MAJOR CHEMICAL CONSTITUTIONS[14]:

1. Loganic acids

2. Cuchiloside
3. Strychnine and Isostrychnine
4. Kajine and Novocain(N-methyl pseudobrucine)
5. Vomicine
6. Strychinine
7. Rucine

AYURVEDIC VIEW OF *KUCHALA*:

In Bruhat Trayi(3 basic granthas of *Ayurveda* i.e.Charaka Samhita,Sushrut Samhita and Vaghbhata Samhita) and Dhanvantari Nighantu did not mention Vishatinduka or kupillu.Shodhala denoted it as Visha Tinduk and included it in karveeradi varga[15], while Bhavamishra described it as Kakatinduka or Kupilu[16].Kaideva Nighantu quated a drug Vishamusti,which may be nuxvomica[17]. Rajanighantu described *Kuchala* in Prabhadradi varga[18].He also quated five types of Vishamushti .In ethanomedicine other species of the same genus are in vogue in Telangana (a state in India). These species are used in the name of different kinds of 'Mushini'.In modern era, due to its poisonous nature, Nuxvomica was very reluctantly introduced into the European pharmacopoeias.

A. **AYURVEDIC PROPERTIES**: [19]

1. *Rasa: -KatuTtikta Guna:- Rruksha,Laghu, Teekshna,*
2. *Veerya:-Ushna,*
3. *Vipaka:- Katu*
4. Doshaghanata: *Kaphavatshamak Kaphapittanashanam*[20][21]
5. Rogghnata[22]: *Sandhivata, Amavata, Vrana, Kushatha, Nadishoola, Ardhanga,Gatibhransha,Gyanabhrasnsa, Peshiposha ,Kampa, Badhirya, Ardita, Pakshaghata, Andria, Amadya, Amashyastha, Amadosha ,Grahani,Udarshoola,Arsha,Krimi, Raktavikara,Vatarakta, Hridyashaithilaya, Hridayodara, Kasa, Phuphusshotha, Dhwajabhangha, Sheeghrapatana,Daurbalya, Kushtha, Kandu, Atisweda ,Vishamajwara, Visuchika.*
6. Karma: *Shothahara, Puthihara, Vedanasthapana, Uttejaka ,Nadibalya, Deepana, Pachana, Grahi, Shoolprashamana, Hridyottejaka, Kaphaghna, Kasahara, Vajikarna, Balya, Katupaushtika, Kushthaghna, Kandughana,Swedapnayana*.
7. Uses –[23]
   i. *Hanti Meda* – lowers cholesterol, useful in obesity
   ii. *Krumihara* – useful in intestinal worm infestation
   iii. *Shvasahara* – useful in asthma and wheezing
   iv. *Gulmahara* – useful in abdominal tumor, bloating
   v. *Arshohara* – useful in hemorrhoids
   vi. *Mushikavishahara* – useful in rat bite
   vii. *Vishtambhi* – causes constipation
   viii. *Rochana* – improves taste, useful in anorexia
   ix. *Agnikrut* – improves digestion strength
   x. *Grahi* – absorbent, useful in diarrhea
   xi. *Kushtahara* – useful in skin disorders
   xii. *Pramehajit* – useful in urinary disorders, diabetes

KUCHALA SHODHANA: (Detoxification / Purification method) [24]

1. Fry *Kuchala* seeds with ghee in a pan on slow flame till it's outer covering become led-yellow coloured.Take these seeds and remove the outer skin of seeds and grind the hot pulp immediately. This *shodhana* process is useful in emergency use of *Kuchala*.

2. Wrap *Kuchala* seeds in a cloth, keep it in Dolayantra with cow's milk, and boil it

for 3 hrs. After 3 hrs remove the seeds, grind it in iron Kharal, and use the churna (powder). Skin of seeds is removed. It is boiled with milk for 7 days, dried, then it is fried in ghee and powdered.

3. Medicinal Dose:-1/2 to 1 Gunja[25]

***AYURVEDIC* PREPARATIONS OF KUCHALA[26]**:

Navjeevan Rasa, Agnitundi rasa, Laxmivilas Rasa, Shoolanirmulan Rasa, Suptivatari Rasa, Sarameha Vishapaha Yoga,
Vishatinduk Taila (External use).

PART USED [27]-

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[28] –

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 tonic i.e. sustained.
6. Body is thrown in to the form of arch Blood stained froth at nose and mouth
7. Cyanosis
8. Mind remains clear till end
9. Eyes :-prominent and staring, with dilated pupils
10. Death is painful

DIAGNOSIS OF POISONING[29]:

1. TLC gives reliable qualitative results on gastric aspirate, urine, blood or tissues.
2. HPTLC provides accurate quantitative
3. Best specimens are urine and gastric aspirates
4. Blood levels in the range of 0.1 to 0.3 mg/100ml are generally lethal.

POST MORTEM APPEARANCE:[30]

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 lymph in 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 caloricity
7. Dilated pupils.

FORENSIC SIGNIFICNCE OF *KUCHALA*[31]:

1. Upavisha Kuchala (Strychnous Nuxvomica Linn) –Strychnine has been uncommonly employed in murder owing to various obvious reasons like bitter taste, dramatic nature of symptoms-that will always arouse suspicion of foul play, and easy delectability in body fluids and tissues.

2. Accidental poisoning can result in children who chew on the seeds out of curiosity while playing or foraging in the countryside

3. Previously, therapeutic misadventures. used to be fairly common when strychnine was an approved constituent of various over-the-counter tonics and cathartics

4. Accidental poisoning can also result from inadvertent consumption of strychnine-containing rodenticide

5. Owing to the agonizing nature of death, strychnine is rarely employed in suicide.

ACTION AND USES:

The root is bitter, tonic, febrifuge and useful in cholera, intermittent fever and bites of venomous reptiles. The leaves are applied as poultice in the treatment of chronic wounds and ulcers and leaf decoction is useful in paralytic complaints. The pulp of the ripe fruit is used in treating paralytic affections of palms and foot. The seeds are bitter, nerving, tonic, Alexiteric, Aphrodisiac, Appetizer, Ant periodic, Antihelminthic, Emetic, Digestive, Purgative, Diabetes, Colic, Intermittent And Malarial Fever, Insomnia, Cardio spasms, Skin Diseases, Nerve Debility, Dyspepsia, Diarrhea, Dysentery, Hysteria, Mental Emotions, Epilepsy, Chronic Constipations, Gout, Chronic Rheumatism, Hydrophobia, Spermatorrhoea, Opium or Lead poisoning, Paralysis and weakness of limbs. The wood is used in Dysentery, Dyspepsia and Fevers.

Strychnous nuxvomica is also used in homeopathy. [32]It is said in Homeopathy "if you do not know what should be prescribed, then give Nux Vomica." It is often used as an antidote for over drugging. Nux Vomica is generally prescribed for males who are thin, irritable and lose temper by slight provocation. Also, for those who do a good deal of mental work, study a lot or handle business affairs and lead indoor life. Because of mental strain, such people often seek the help of stimulants, such as coffee, liquor, or use sedatives like opium or any other cannabis preparation. People, who take rich food, attend parties and generally overindulge themselves until late at night, often have irregular bowel movements (or have constipation). They often take laxatives like Hajmola, liver tonics, etc. Nuxvomica soothes and calms overexcited nervous system and improves digestion and bowel movement. It increases Appetite, vigor and gives potency to males who have ruined themselves by excessive use of stimulants. That is why it is called the medicine of "bigrey Nawab (spoilt men).It may be taken in low potency of 6 or 30 (in case of irritable, overexcited persons), and above 200 or more potency in case of habitually constipated and hard drinkers. It is one of the best remedy for mania-a-potu (acute alcoholism).Nux Vomica of 6 and 30 potency should be taken once a day before going to sleep at night. If it is 200 potency then it should be taken once a week. If it is still higher, then once a fortnight[33]

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 Vaghbhata Samhita*) and *Dhanvantari Nighantu* did not mention *Kuchala*. Even in *Kalpasthana Sushruta* described types of visha according to adhisthana (a part of plant were 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. *Rastarangini* 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 detactability 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 dravya like *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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