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Ayurvedic toxicological review article on Kuchla

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Abstract
Kuchala (*Strychnos nux-vomica* Linn) is a well known poisonous plant in Indian device of medicine. it is blanketed in Upavisha by ayurveda texts. *Strychnos nux vomica* Lin is a famous folk medication from ancient times. Even these days also many people in ruler India use Kuchala in medication shape. in line with achryas even an acute poison can come to be an top notch drug if it is well administered, and further even a drug, if no longer properly administered, turns into an acute poison. Kuchala is a known vegetable poison to Ayurveda in addition to modern-day technological know-how however it is used in lots of medicinal preparations of Ayurveda and different allied medicinal pathies. Strychnine is a major contain of kuchala which turned into first used medically in 1540, and persevered to be used in many stimulants, Tonics and cathartics. In this text the general statistics about the poisonous plant Kuchala, it's, Toxicological factor, Medicolegal element and healing uses referred to in Ayurveda, Agadatantra and in other systems of medication.

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

Introduction
Kuchala or the *Strychnos nux-vomica* L is one of the Upavisha that has been explained in element in Rasa- tarangini regarding its homes, therapeutic makes use of. and methods of purifications and many others. *Nux-vomica* is a deciduous tree up to 15 meter tall, often with quick, robust, axillary spines. it's far widely distributed in India and observed for the duration of tropical regions of India, Sri Lanka, Vietnam, Thailand, Cambodia, and Malaysia. it's miles defined in Surasadi gana of sushruta and Am-radi phala varga of bhavprakasa. The Kuchala tree includes many alkaloids of medicinal im- portance, however its seed is richer in those materials as defined in pharmacopoeias. it's far wealthy in alkaloids, flavonoids, tannins and triterpenoids, glycosides, lig nins and steroids. more than ninety chemical com- pounds were remoted from distinct components of nux vomica, but strychnine and brucine are the most important toxic alkaloids. They occur not most effective inside the seeds but additionally in roots, wooden, bark, fruit pulp and difficult fruit shells Seeds comprise 2.6 to 3.zero% of overall alkaloids, of which 1.25 to two. Five % is strychnine and 1.five to one. 7% is brucine. The seeds include chlorogenic acid, a glyco- side (loganin) and 3.0% of fixed oil in addi- tion studies research have pronounced its anti-allergic. , antimicrobial, anticancer, antipy- retic, gastro protective, antidiabetic, antialcoholic, hepatoprotective, antioxidant, antinociceptive, anti- snake venom and neuropharmacological properties [1-6].

Pharmacological Properties of Kupilu
Kupilu has been attributed different pharmacological properties. Its seeds possess Tikta, Kotu and Kashaya Rasa: Laghu, Ruksha, Teekshna Guna; Ushnu Virya and Kotu Vipoku According to some authors, its unripe fruits are Sheeta Virya and the ripe fruits having Guru and Vishada Guna with Madhura Vipaka.

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. Some other minor alkaloids are colubrine, B-colubrine, 3-methoxyicajine, protostrychnine, novacine, n-oxystrychnine, pseudostrychnine, isostrychnine, chlorogenic acid, and glycoside

Toxicological Effects
In about an hour after a poisonous dose of Strychnine, the patient begins to feel uneasy from a sensation of Impending suffocation. The tetanic convulsions then on commence with great violence, nearly all the muscles of the body being affected at once.

The limbs are thrown out, the hands are clenched, the head is jerked forwards and then hent backwards, and the whole body is perfectly stiff from the violence of the contractions. The pulse is very rapid, the temperature may rise. Hearing and sight acute. The convulsion lasts a minute two, then the muscles relax, and the patient feels exhausted and sweats all over. The intermission is short, convulsions soon come on again, and again there is a relapse the state of muscular relaxation. The convulsions now rapidly increase in severity and owing to the violent contractions of the muscles of the back, the patient is in the position of opisthotonus, resting on his head and his heels. The abdominal muscles as hard as a beard, the chest is fixed, the face becomes livid, the eyeballs are staring. The contraction of the muscles of the face causes a *Risus sardonicus* but those of the law are not affected till quite the ond, consciousness is retained to the last. The slightest noise or avan a bright light will reflex bring on the convulsions, which may jerk the patient out of bed. Ultimately he dias from axhaustion and asphyxia. The smallest dose of Strychnine known to have killed an adult is half a grain. In Post mortem-The usual appearances of death by asphyxia are seen [7].
It is mostly processed in the liver.

Strychnine: 15-50 mg (1-2 mg/kg body weight) is the lethal amount.

Fatal Dose: A single smashed seed.

Fatal Time: 1-2 hours

Sign & Symptoms
A bitter flavor, A feeling of choking and rigidity in the neck and face.
Restlessness,
Increased acuity of perception,
Increased rigidity of muscles and muscular twitching.
Cyanosed Face
Look is anxious
Eyes are staring

Convulsions: Because the threshold for CNS activation is decreased, any sensory stimulus-pain, touch, or noise can cause a severe spasm of the muscles. Clonic at first, but ultimately turns tonic and affects every muscle at once.
Risus sardonicus: This ailment is caused by the jaw and face muscles contracting, drawing the corners of the mouth together.

Findings in Post Mortem Study
Not distinctive.
Rigor mortis develops quickly.
Asphyxial warning signs.
Blood that has extravasated may be seen in the muscles. The viscera are clogged.

About Medico-Legel Aspect of Kuchala
One of the worst toxins. Typically, overdoses, poison mistaking for other safe drugs, quack medicines, or children ingesting the seeds result in unintentional death. It is employed as a rat- and dog-killer as well as an aphrodisiac and a poison for livestock and arrows.

Treatment of Toxicity
If spasms have not closed the jaws, stomach pump at once. Employ emetics cautiously and discriminatively. The stomach is then washed out with a dilute solution of potassium permanganate. A suspension of animal charcoal should be introduced to absorb any free strychnine and afterwards removed. However, if the Strychnine is not removed, death is as certain as from the shock of convulsion, put the patient immediately under the influence of chloroform or ether, and keep him in perfect reposo in a dark room. Inject large doses of potassium bromide and chloral hydrate per-rectum.. lise no stimulants and make no noise, avoiding whispering even, or feeling the sufferer's puise, Chemical substances, such as tannin. simply retard alkaloid absorption without decreasing the final lethal action of the drug. Physiological antidotes, or antagonistic poisons, such as phenobarbitone sodium, sodium amytal intravenously in doses of 500-750mg, repeated in similar or lesser dosage as often as required, maphenesin Intravenously in a doses of 3mg/kg body weight, and intravenous diazepam in a dose of 2.5mg/141 chloroform Internally, chloral by the rectum; morphine, physostigmine, and aconitine, hypodermically, sometimes delay death, or in case of small doses of the poison, help to bridge the patient over the critical periad. But if enough Strychnine has been swallowed they cannot save life unless the stomach be cleaned of the poison. Artificial respiration, oxygen, and supportive therapy may necessary [8].

Sodhana Sanskara of Kuchala
The outer layer of the Kuchala seed is scraped off with a knife after it has been dried and marinated in cow's milk for 20 hours at night. After that, it is divided into little pieces and cooked for three days (approximately four hours each day) in cow milk. It is warmed with warm water after each day of bowling, dried, and then used the next day. It is dried under cover and cooked with cow's ghee after three days so that it may be used as a medicine [9].

Pharmacological studies
Anti-cancer study
The aqueous extract of nux vomica roots was used in the study by Rao *et al*., and it demonstrated dose- and time-dependent anti-proliferative activity against human multiple myeloma cell lines with an IC50 value of 11 mg/ml, indicating that the root extract also caused myeloma cells to undergo apoptosis in addition to the disruption of mitochondrial membrane potential and subsequent leakage of mitochondrial cytochrome [10].

Anti- Rheumatic Study
In 109 children who had acute rhinitis, the nux vomica 6C dilution was used. This open, multicenter clinical research showed the efficacy of the homeopathic nux vomica dilution (potency) in treating acute rhinitis. Within 7 days of the trial period, 5.50% of the children had made a considerable improvement, 14.68% had seen a complete recovery, and 79.82% had been entirely cured [11].

Anti Diabetic Study
Healthy albino rats of both sexes weighing 150-250g were used in the study, and diabetes was produced in the animals by giving them 110 mg/kg of alloxan intraperitoneally and fasting the rats for 24 hours beforehand. Blood samples were taken after 72 hours and tested for blood glucose. The present investigation employed albino rats that had blood glucose levels more than 200 mg/dL and were therefore classified to have diabetes. To prevent bias, the blood samples from these rats were taken at random. Aqueous and 50% ethanolic

extracts of *S. nux-vomica* were delivered using an oral feeding needle and distilled water as the carrier fluid. Additionally, this work demonstrated that per-oral administration of the hydroalcoholic and aqueous *S. nux-vomica* seed extracts was successful in reducing, [12].

Hepato-Protective Study

A vivo study showed the hepatoprotective potential of processed seed extract in assays involving CC14- induce liver injury. The results showed that oral administration of varying doses of processed seed extract for 5 days reduced serum levels of glutamate oxaloacetate transaminase (GOT), glutamate pyruvate transaminase (GPT), alkaline phosphatase (ALP), bilirubin, and cholesterol [13].

Some Compound Formulations of Kupilu

Classical pharmacopoeias of Ayurveda. prescribe certain compound und formulations of Kupilu as an ingredient for the treatment of so many disease conditions. Some of them are Agnitundi rase, Shulaharuna yoga, Kupilubeejadi kwatha Krimtmudgare rasol, Kitmarda rasola, Krimigbatint gutike, Mahavisagarbha tailam, Visatindukadi taflom, Visatindukadilepa etc.

Discussion

The Shodhana sanskara, also known as the purifying process, is a technique used to transform deadly pharmaceuticals into life-saving ones by using certain Sanskaras (processes) like Shodhana, Marana, etc. and by rubbing, boiling, etc. to remove their detrimental effects. Since ancient times, Ayurvedic science has adhered to the notion of Visha and Upavishas and the process of employing these substances in medical concoctions. The purificatory methods, or shodhana sanskara, assist to lessen negative effects and boost their therapeutic advantages. One of the Upavishas, Kuchala, or *Strychnos nux-vomica*, has been thoroughly detailed in Rasatarangini with regard to its characteristics, medicinal applications, and purifying techniques, among other things [14].

Conclusion

Kuchala, a deadly substance additionally known as an upavisha, has the capability for use as both a treatment and a poison. it's miles a toxin this is fatal whilst fed on, however if purified, it has first-rate medical powers which can prolong a person's life. it's been effectively hired in numerous Ayurvedic formulations with its essential phyto-chemical components after good enough purification to deal with an expansion of illnesses. To validate its promise, extra phytochemical, analytical, and medical research are required.

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