Ayurvedic Review Article on Kuchla

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Abstract- Kuchala (strychnous nuxvomica Linn) is a widely recognized toxic plant in Indian machine of medication. it's miles protected in Upavisha via ayurveda texts. Strychinine nux vomica lin is a popular people medicinal drug from historic times. Even today additionally many humans in ruler India use Kuchala in medicinal drug shape. according to achryas even an acute poison can turn out to be an first-rate drug if it's miles nicely administered, and in addition even a drug, if not well administered, will become an acute poison. Kuchala is a acknowledged vegetable poison to Ayurveda in addition to present day technology but it's miles used in lots of medicinal arrangements of Ayurveda and other allied medicinal pathies. Strychnine is a chief incorporate of kuchala which turned into first used medically in 1540, and persisted to be used in lots of stimulants, Tonics and cathartics. In this newsletter the overall facts about the toxic plant Kuchala, it's, Toxicological component, Medicolegal aspect and healing makes use of noted in Ayurveda, Agadatantra and in different systems of medicine.

Keywords: Kuchala, Strychinine nux vomica, Upavisha, Agadatantra

INTRODUCTION

Ayurveda Acharyas trust that even a toxic drug may be wonderful and offer more healing benefits if it is nicely administered, and in addition a medicinal plant or a drug, if now not administered nicely may act like a poison[1]. This concept of Visha and Upavisha is dealt in Agada tantra department of Ayurveda. Kuchala is an Indian medicinal plant defined in Ayurvedic technological know-how that has widespread therapeutic advantages. it's also known as as Kupilu or Kuchila and is included beneath the upavisha varga or the sub department[2]. The agencies of medicine which can be having less toxic efficiency and are less deadly however produce certain toxic signs on management are known as as Upavishas[3]. according to historic texts of Ayurveda, the Upavishas or the drugs that have toxic homes can be used for healing purposes after purifying (Sodhana) it in a systematic way[4]. those herbs had been utilized in diverse formulations of Ayurveda in the management of diseases[5]. One such drug is Kuchala or the Strychnos nux-vomica this is determined abundantly in India additionally cultivated in countries like US, Europe and so on.Kuchala is likewise known as Kupilu or Kuchila that is a toxic deciduous tree as consistent with ancient texts.hence inside the contemporary observe, we've got made an exploration of Kuchala in element with its therapeutic, toxicity and medico-legal components.

Botanical Name–
Strychnous nuxvomica
Family–Loganiaceous, Karaskara Kula
Vernacular Names[6]
Hindi Name- Kuchala
English Name- Nuxvomica
Telugu Name- Mushini Ginjalu, Mushti Vittulu
Bengali Name- Kunchila
Marathi Name –Kajara
Gujarati NameJherkuchala, Zerkochala
Tamil Name- Yettikottai
Malayalam Name- Kaajjeel
Arabian Name – Ajaraki, Habbul Gurav
Parsi Name – Kuchula, Phuloosemaahi
Sanskrit Synonyms[7]
: Kuchelaka,kuchel, Kuchila, Kuchil, Vishatinduk, Tindu, Tinduk, Vishatinduk, Karaskara, Ramyafala, Kupaak, Vishamushtika, Vishamushti, Kaalkuta.
Botany
Strychnos nux-vomica is a medium sized deciduous tree with dense, white wood is dense and close grained.
Trunk: The trunk is tall, thick, straight and cylindrical covered with yellowish-grey to dark grey, smooth and thin barks.
Branches: Irregular and covered with smooth ash coloured bark and shiny dark green young shoots.
Leaves: Simple and entire, smooth, short-stalked broad, opposite leaves with blade orbicular to broadly

elliptical or ovate, base rounded to cordate. Its features with apex shortly acuminate or acute, glabrous and shiny above, minutely hairy especially on veins beneath, 3-5 veined from the base, D Inflorescence: Featured with many-flowered and appears with young leaves at the end of branchlets or on axillary shoots. Terminal cymes with. hermaphrodite flowers, actinomorphic, homogamous, greenish-white coloured, small in size, nectariferous, funnel-shaped and emits unpleasant odour.

Phytochemical Constituents

The Kuchala tree contains many alkaloids of medicinal importance but its seed is richer in these constituents as described in pharmacopeias. It is rich. in alkaloids, flavonoids, tannins and triterpenoids, glycosides, lignins and steroids. 1 More than 90 chemical compounds have been isolated from different parts of nux vomica but strychnine and brucine are the principal toxic alkaloids. They occur not only in the seeds but also in roots, wood, bark, fruit pulp and hard fruit shells. 111 Seeds contain 2.6 to 3.0% of total alkaloids, of which 1.25 to 2.5% is strychnine and 1.5 to 1.7% is brucine. The seeds contain chlorogenic acid, a glycoside (loganin), and 3.0% of fixed oil in addition.

Toxicological Significance

Take Action Strychnine can counteract the inhibitory neurotransmitter glycine by preventing its spinal cord receptors and brainstem post-synaptic absorption.Lower amounts of neurotransmitters cause neuronal impulses to be initiated and lessen the inhibitory impact of glycine.In the absence of an inhibitory effect, motor neurons continue to fire, causing the victim to experience excitement of their muscles all the time. (Publication) Its primary acting cells are the anterior horn cells, or Renshaw cells, found in the spinal cord.neurotransmitter of inhibitory presynaptic neurons. Metabolism: The liver is where most of the metabolism occurs. Moreover, strychnine and GABA have no effect on the fatal dosage. Strychnine: 15–50 mg (g/kg body weight).

Flowers: Pentamerous with calyx lobes, ovate outside and hairy densely. Its corolla is 1cm long slender tube outside the glabrous with widening at the throat, having pubescence at base, lobes narrowly ovate, of 3mm long, margin thickened and minutely hairy, greenish white to white; stamens inserted at the mouth of the corolla tube, exerted altering with corolla lobes. Anthers pale cream in colour, dithecous, introrse and dehisce longitudinally,

Ovary: The style is filiform with glabrous and long corolla tube with stigma capitates (head-shaped). It is designed as bicarpellary with axile placentation, superior and glabrous with ovoid shape.

Fruits: An indehiscent berry and a globose with shell both hard and smooth. Full of fleshy and jelly-like pulp containing 1-5 seeds, soft and white in colour. These seeds are orbicular or ellipsoid in shape and give a characteristic shine to the seeds by with its dense silky hairs. This seeds have two sides with concavity on one side and convexity on the other with a depression on both the sides. The inner layer Endosperm contains a small embryo and is odorless, dark greyish in colour, very hard, bitter in taste.

1 crushed seed Fatal period: 1-2 h

Signs and Symptoms

Within 15-30 min of ingestion, particular signs and symptoms can be observed and a 'conscious' seizure occurs as the characteristic presentation of strychnine poisoning.

Below signs and symptoms may be observed:

1. Bitter taste.

II. Choking sensation in throat and stiffness of the neck and face.

III. Prodromal symptoms: Restlessness, increased acuity of perception, increased rigidity of muscles and muscular twitchings.

IV. Face: Cyanosed, look is anxious, eyes are staring, eyeballs are prominent and the pupils are dilated. Mouth is filled with bloodstained froth.

V. Convulsions: The threshold for CNS stimulation is lowered with the result that any sensory stimulus (pain, touch or noise) may produce violent muscular spasm. Initially, clonic but eventually becomes tonic and affects all the muscles at the same time.

In the muscles, the extravasated blood may be observed. • Viscera are congested.

• Risus sardonicus: contraction of the jaw and facial muscles with the corners of the mouth drawn leads. to this condition.

The anti-gravity muscles exhibit the most prominent convulsions, which result in hyperextension (opisthotonus). Occasionally, the abdominal muscles may spasm, causing the body to bend forward or

laterally (emprosthotonus or pleurosthotonus). Convulsions last between 30 and 60 seconds. The muscles are entirely relaxed during convulsions. The patient appears good, but is fatigued and has begun breathing. Within five to fifteen minutes, the patient experiences one more convulsion triggered by the smallest stimulus, such as a gentle air current touching them or the sound of an abrupt noise.

• Lactic acidosis, rhabomyolysis and hyperthermia occurs due to increased muscle tone, hyper reflexia, agitation, restlessness and convulsions. • Within the occurrence of 4-5 convulsions, patient cannot breathe and that leads to death. Mind remains clear and consciousness is not lost till the death, but death occurs due to medullary asphyxia, paralysis, exhaustion or due to the spasm of respiratory muscles.

Treatment

There is no antidote for strychnine poisoning.

• Maintain clear airway and adequate ventilation.

Convulsions Control: with a dark room without light and disturbance and noise. Benzodiazepines remain the first-line of treatment for strychnine induced muscular hyperactivity. Diazepam 0.1-0.5mg/kg IV slowly. If ineffective, general anesthetics and/or muscle relaxants, like gallamine should be given.

• Antidotes such as pentobarbital sodium or sodium amytal (Barbiturates) are given in the dose of 300-600mg IV.

Gastric lavage with KMnO, may be done cautiously, if there are no convulsions. Activated charcoal is administered to adsorb strychnine and to reduce its absorption after 1 h of ingestion.

Hyperthermia is treated by active cooling with ice water immersion, cooling blanket or mist and fan. Symptomatic treatment.

Postmortem Findings

• Not characteristic.

• Rigor mortis appears early. • Signs of asphyxia.

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.

Sodhana

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. After that, it is chopped into tiny pieces and boiled for three days, for roughly four hours every day, in cow's milk. It is dried and reheated with warm water at the conclusion of each bowling day, ready for use the next day. It is cooked with cow's ghee and dried in shade for three days before being utilized as a medicinal agent.

Therapeutic Significance

• Analgesic and anti-inflammatory

• Anticonvulsant

Anti-tumor effects

• Anti-amnesic Antidiarrhoeal

• Immunomodulatory effect

• Antisnake venom activity

Hepatoprotective and anticholestatic activities.

Important Formulations or Yogas • Maha Vishagarbha Taila.

Ekanggavira Rasa

Vishatinduka Vati

• Krimimudgara Rasa

• Navajeevanrasa

• Agnitundirasa

• Laxmivilasarasa

• Shulnirmulanarasa

• Suptivaatarirasa

Vishatinduka Taila [8-10]

DISCUSSION

Kuchala is a widely recognized spinal poison to modern science. it is utilized in Ayurvedic pharmacopeia from historical period. Ayurveda texts like Rasatarangini, Rasratnasomucchaya, Raj-Nighantu, and Bhavprakasha stated element description of the plant, fundamental residences. healing uses, medicinal arrangements. a few Ayurveda texts like Bruhat-Trayi (3 basic granthas of Ayurveda ie. Charaka Samhita, Sushrut Samhita and Vaghbhata Samhita) and Dhanvantari Nighantu did no longer point out Kuchala. Even in Kalpasthana Sushruta defined styles of visha consistent with adhisthana (a part of plant were poison is living), amongst it he consists of fala visha (toxic end result), but he did not mention in it. due to a few residences like Ashukaritwa, Ushna, Teekshna vish dravya get spread unexpectedly

within the body. So for the quick movement of medicines many Ayurvedic formulationscontain these vishadravyas like Kuchala as their ingredient. by making use of these houses of vishadravyas drugs can be made greater effective. So we determined that many Rasashastra based totally texts are having description of toxic tablets like Kuchala in element. Rastarangini stated the cleansing process of Kuchala, so that purified Kuchala can get utilized in medicinal formulations. cutting-edge toxicology consists of it in a deadly poison. it's far categorized as Neurotoxin spinal excitant poison. Medico legally this plant is crucial too. Homicidal dying because of Kuchala is unusual because of bitter flavor, dramatic signs and symptoms and smooth detactability in body fluids and tissues. unintended poisoning is commonplace among youngsters. Homeopathy also mentions many therapeutic makes use of of Kuchala. In homeopathic material medica Nuxvomica is cited as laxative, Digestive, increasing power and power in male and also useful in alcoholism.

CONCLUSION

Kuchala (strychnous nuxvomica Linn) is one of the lethal poisons acknowledged to mankind. although it's miles poison, it's miles crucial part of Ayurvedic and Homeopathy pharmacopeia. it is a primary aspect of many ayurveda formulations. because of residences like Ashukaritwa, Ushna, Teekshna vish dravya like Kuchala get unfold unexpectedly inside the body. So for the fast motion they're utilized in medicinal formulations of Indian machine of medicine and different systems.

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