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A LITERARY STUDY ON KUCHALA (Strychnous nuxvomica Linn). AN IMPORTANT POISONOUS MEDICINAL PLANT

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ABSTRACT

In the Indian medical system, kuchala (Strychnous nuxvomica Linn) is a well-known toxic herb. Ayurvedic writings mention it in Upavisha. Popular traditional medicine from the past is strychnine. Many people continue to utilize Kuchala as medicine in ruled India today. If correctly provided, even an acute poison may turn into a good medication, and conversely, a medicine can turn into an acute poison if improperly administered. Kuchala is a vegetable that both Ayurveda and contemporary science recognize as being poisonous, yet it is a common ingredient in many of the therapeutic concoctions employed by these two medical systems. One of Kuchala's key ingredients is strychnine, which has been utilized in various stimulants, tonics, and cathartics since it was first employed therapeutically in 1540. The toxicological, medical, and therapeutic applications of the poisonous herb Kuchala as described in Ayurveda and other medical systems are all covered in detail in this review article.

KEYWORDS- Kuchala, strychnous nuxvomica, Upavisha, etc.

INTRODUCTION

A well-known herb in Indian medicine called kuchala (strychnous nuxvomicaLinn) is utilized widely in several traditional formulations with significant therapeutic value. Strong poisons have been officially claimed to have the potential to be the best medication if utilized properly (shodhana), in the right therapeutic dose, and with the right formulation. In contrast, a good drug may have an unfavorable effect if it is not taken on the right patient in the right dosage.[1]

Rasa Ratna Samuchhaya discussed the eleven Upavisha numbers. Upavisha are a class of medications described in Ayurvedic literature as being less poisonous and less fatal but still producing some toxic effects when taken or administered. Their hazardous potential is decreasing. Effectively in many formulations to treat various ailments following the correct Shodhan sanskar (processing of purification). The major component of Kuchala, strychnine, has been used in traditional medicine since ancient times. In the sixteenth century, nuxvomica was imported to Europe, but it was not utilized medically. At that time, the alkaloid strychnine was being used as a rodenticide. It occasionally kills stray dogs, thus the term "dog buttons," and is mostly used to poison dogs, cats, crows, etc. Strychnine was first employed therapeutically in 1540 and was still being utilized in various tonics, cathartics, and stimulants in the 1960s.The seeds are mostly used as stimulants, aphrodisiacs, appetizers, digestive aids, purgatives, and anti-periodic[2]

Furthermore, it is utilized to treat anaemia, asthma, bronchitis, intermittent fever, and malarial fever. After thorough purification, Ayurvedic doctors successfully used this medication and concoctions using it to treat a variety of illnesses. Kuchala beej is a common component in several Ayurvedic medicine preparations, including Agnitundirasa, Laxmivilasarasa, Shulnirmulanarasa, Suptivaatarirasa, and Vishatinduka. This review article is an honest attempt to condense the information on the lethal drug Kuchala (strychnous nuxvomica Linn) as it has been described in the Indian medical system in terms of its literary, pharmacological, toxicological, and therapeutic uses in various medical systems, including Ayurveda.[3]

Scientific Classification:

Kingdom: Plantae

Order: Gentianales

Family: Loganiaceae

Genus: Strychnos

Species: S. nuxvomica

Botanical Name– Strychnous nuxvomica

Family–Loganiaceous, Karaskara Kula

Vernacular Names

Hindi Name- Kuchala

English Name- Nuxvomica

Bengali Name- Kunchila

Marathi Name -Kajara

Gujarati Name- Jherkuchala, Zerkochala

Tamil Name- Yettikottai

Sanskrit Synonyms: Kuchelaka, kuchel,

Distribution:

It may be found in Uttar Pradesh, Bihar, Orissa, the Coromandel Coast, Andhra Pradesh, and Karnataka, as well as across tropical India up to an elevation of 360 m. The woodlands around the western shores are where it is most prevalent.[3]

PLANT DESCRIPTION

The plant is close-grained, thick, and hard white. The branches are unruly and have smooth ashen bark covering them. The young shoots have a glossy covering and a vivid green hue. The leaves are arranged in the opposite way and are oval in shape with short stalks, a lustrous coat, and smooth surfaces on both sides. About 4 inches (10 cm) length and 3 inches (7.6 cm) broad, the leaves. The blooms have a funnel-like form and are tiny and light green in color. They blossom in the chilly months with a smooth and unpleasant odor.[4]

The fruit have a smooth, rigid shell that is a beautiful shade of orange when mature, and they are roughly the size of a big apple. The fruit's white, mushy flesh is surrounded by a jelly-like pulp that contains five seeds and is coated in a fuzzy woolly material. When the fruit is mature, the seeds are removed. Following that, they are washed, dried, and sorted. The seeds are shaped like a flattened disc and are entirely covered in hairs that radiate outward from the sides' centers. As a result, the seeds have a distinctive gloss.[5]

CHEMICAL COMPOSITION

Brucine, Strychinine, Vomicine, Kajine and Novocain (N-methyl pseudobrucine), Strychnine and Isostrychnine.[6]

PROPERTIES OF KUCHALA

The three primary Ayurvedic texts, Charaka Samhita, Susrut Samhita, and Vaghbhata Samhita, are not mentioned in Bruhat Trayi or Dhanvantari Nighantu. While Bhavamishra referred to it as Kakatinduka or Kupilu, Shodhala identified it as Visha Tinduk and put it in the karveeradi varga. A medication called Vishamusti, which Kaideva Nighantu analysed, may be nuxvomica. Kuchala was mentioned by Rajanighantu in Prabhadradi Varga. Additionally, he calculated the five different forms of Vishamushti. Due to its deadly character, Nuxvomica was unwillingly accepted into the European pharmacopoeias in the contemporary age.[7]

Rasa: -Katu, Ttikta

Guna:-Rruksha, Laghu, Teekshna

Veerya:-Ushna

Vipaka:- Katu

DOSHAGHANATA: Kaphavatshamak Kaphapittanashanam Rogghnata: Sandhivata, Amavata, Vrana, Kushatha, Nadishoola, Ardhanga ,Gatibhransha,Gyanabhrasnsa,Peshiposha ,Kampa, Badhirya, Ardita, Pakshaghata, Andria, Amadya, Amashyastha, Amadosha ,Grahani, Udarshoola.

KARMA: Shothahara, Puthihara, Vedanasthapana, Uttejaka ,Nadibalya, Deepana, Pachana, Grahi, Shoolprashamana, Hridyottejaka.

USES

Krumihara, Rochana, Agnikrut, Grahi, Kushtahara, Pramehajit, Gulmahara, Bloating, Arshohara, Mushikavishahara, Vishtambhi.

DETOXIFICATION PROCESS

1. Cook kuchala seeds in ghee over a low heat until their outer shell turns a bright golden colour. Take these seeds, peel off the seed shell, and quickly crush the heated pulp. This shodhana procedure is helpful while using Kuchala in an emergency.[8]
2. To prepare Kuchala seeds, wrap them in a towel, place them in a pot with cow's milk, and boil them for three hours. Remove the seeds after three hours, then use the Churna to ground the mixture in iron (powder). Seeds have their skin removed. It is dried, then simmered in milk for seven days before being fried in ghee and pulverised.[9]

MEDICINAL DOSE:-1/2 to 1 Gunja

AYURVEDIC PREPARATION

- Suptivatari Rasa
- Vishatinduk Taila
- Agnitundi rasa
- Navjeevan Rasa
- Laxmivilas Rasa
- Shoolanirmulan Rasa
- Sarameha Vishapaha Yoga

MODE OF ACTION

Strychnine stimulates the anterior horn cells of the spinal cord in particular, which results in significantly enhanced reflex excitability. Normal inhibition of motor cell stimulation is lost, resulting in intense generalized muscular spasms in response to even the smallest stimuli, such as sound, light, or air current.[10]

PHARMACOLOGICAL ACTIVITES

Strychnine demonstrated remarkable negative chronoscopic activity on frog isolated heart and guinea pig atria, and activity was also sustained in vivo. It also exhibited anti-HIV, hepatoprotective, anticholestasis, anti-lipid peroxidative property, ulcerative, insecticidal, and CNS stimulant properties (open chest dog). Subcutaneous injection of strychnine (50 mg/kg) raised acetylcholine levels in the spinal cord and caused 4-hour-long convulsions in frogs. The most effective cytotoxicity was demonstrated by isostrychnine N-oxide and isobrucinne N-oxide against the tumor cell lines K562, HELA, and HEP-2.[11]

TOXICITY LAKSHANA

- Bitter taste
- twitching and rigidity of the facial and neck muscles
- convulsions that are at first clonic
- Intermittent, and subsequently tonic, or continuous.
- Convulsions are immediately brought on by any stimulation, including patient movements, noise, touch, light, or water.
- As a result of the muscles being tight and stiff, the body is thrust into an arch.
- Bloody foam at the lips and nose
- Death is painful; eyes are prominent and glaring with dilated pupils; mind is clear to the very end.

DIAGNOSIS

- Gastric aspirate, urine, blood, and tissues are the best specimens for TLC because they yield accurate qualitative data.
- HPTLC offers precise quantitative information.
- Generally, blood concentrations between 0.1 and 0.3 mg/100 ml are fatal.

POST MORTEM FINDINGS

- Clinical attitudes' rigid attitudes may linger for a very long period after death. [35]
- Oozing and haemorrhages are possible; they frequently occur in muscles.
- The lymph in the thoracic duct is bloody, as it would be after any violent muscular action that results in death.
- When muscles spasm, breathing becomes difficult and a person dies from suffocation.
- Early rigor mortis onset and fading.
- Dilated pupils and post-mortem caloricity.

DISCUSSION

For current science, kuchala is a well-known spinal toxin. It has been employed in Ayurvedic medicine since the beginning of time. The plant's fundamental characteristics, therapeutic applications, and pharmaceutical formulations were all documented in depth in Ayurvedic literature such Rasatarangini, Rasratna- samucchaya, Raj-Nighantu, and Bhavpra- kasha. A few Ayurvedic works, like Bruhat-Trayi (which includes the three main granthas of Ayurveda, namely Charaka Samhita, Susrut Samhita, and Vaghbhata Samhita) and Dhanvantari Nighantu, did not include Kuchala. Fala visha (poisonous fruits) is one of the forms of visha adhisthana (a section of the plant where poison lives) that Su-shruta described, however he didn't include it in Kalpasthana. Because of certain qualities like Ashukarit- wa, Ushna, and Teekshna, vish dravya spreads quickly throughout the body.[12]

Therefore, certain vishadravyas, such as Kuchala, are an element in many Ayurvedic formulations for the fast action of medications. It is possible to increase the effectiveness of movies by utilizing these characteristics of vishadravyas. As a result, we discovered that several writings based on the Rasashastra provide detailed descriptions of lethal substances like kuchala. Rastarangini described the purification method for kuchala so that it may be employed in medicinal compositions after being detoxified. It is a lethal toxin according to contemporary toxicology. It falls under the category of a neurotoxin and spinal excitant poison. Legally speaking, this plant is also significant. Due to the bitter taste, severe symptoms, and ease of detactability in human fluids and tissues, homicidal death caused by kuchala is uncommon. Children frequently get poisoned by accident.[13]

CONCLUSION

One of the most lethal poisons that mankind is aware of is kuchala (strychnous nuxvomica Linn). Despite being toxic, it plays a significant role in Ayurvedic and Homeopathic pharmacy. It is a fundamental component of many Ayurvedic formulas. Vish dravya like Kuchala quickly spread throughout the body as a result of characteristics like Ashukaritwa, Ushna, and Teekshna. Therefore, they are employed in Indian system of medicine and other systems' pharmaceutical formulations for their fast effect.

CONFLICT OF INTEREST –NIL

SOURCE OF SUPPORT- NIL

REFERENCES

1. Shastri Ambikadatta (Suratnojivala Hindi Commentary), Rasaratnasam mucchaya, Chukhambha Amarbharti Prakashan, Varanasi, Ed.8th, 1988, Peg no.170.
2. Dr. Namburi Shekhar U.R, A Textbook Of Agadtantra, Chukhambha Sanskrit Sansthan,Varanasi, Reprint2013,peg no. 16.
3. Pillay V.V. Comprehensive Medical Toxicology,2nd Ed, Paras Medical Pub- lisher,Hydrabad, India,peg no.878

4. Rasatarangini edited by Pandit Kashi- nath Shasti, Motilal Banarasidas, 41 U.A. Banglo Road, Jawahar Nagar, Delhi 110007, 11th edition
5. https://en.wikipedia.org/wiki/Strychno s_nux-vomica.
6. Dr.Shastry J.L.N.,Dravyaguna vijna- na,Vol-2, Chukhambha Orientaliya, Varanasi, Ed.3rd,2008,peg no.353.
7. Pandit Kashinath Shastry, Rasataran- gini,Motilala Banarasidas, Delhi, Ed. 11th, 1979,peg no 676.
8. Pandit Kashinath Shastry, Rasataran- gini, Motilala Banarasidas, Delhi, Ed, 11th, 1979,peg no 675.
9. Shastri Ambikadatta, editors, Sushrut- samhita-klp.3/3, Chaukhambha Sanskrit Sansthan, Varanasi, Reprint 2000, Peg No .16.
10. Singhal S. K., Toxicology At A Glance, The National Book Depot, Mumbai, Ed, 7th, reprint 2009, Peg. No.114.
11. Dr. Shastry J.L.N. Dravyaguna vijna- na,Vol 2,Chukhambha Orientaliya, va- ranasi, Ed.3rd,2008,peg no.353.
12. Mishra B. and Vaishya R., Bhavapra- kasha,Purwardhwam,Chukhambha Sanskrit sansthana, Varanasi, Ed.8, 1993, peg no.568.
13. Dr. Chauhan Mitesh, Chauhan Mitesh et al: Upavisha Kuchala (Strychnous Nuxvomica Linn) – IAMJ: Volume 3; Issue 7; July- 2015.