

**REVIEW ARTICLE ON TO INVESTIGATE THE FINDINGS,
POTENTIAL ADVANTAGES AND SIDE AFFECTS OF *STRYCHNOS
NUX VOMICA*.**

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ABSTRACT

Strychnos nux-vomica L. belongs to family Strychnaceae. The seed, known as "Kod-ka-kling," has long been used as a traditional Thai medicinal cure. Thai traditional medical textbooks states that *S. nux-vomica* seed has been used to treat numbness, paralysis, and diseases of the central nervous system. It has also been used as part of a Pikhad-kodpisate remedy, along with the roots of *Anacyclus pyrethrum* (L.) DC. and the rhizome of *Rheum palmatum* L., to treat diseases of the oral cavity and oropharynx, fever, menstrual disorders, hemorrhoids, and insect bite wounds. According to earlier research, *S. nux-vomica* seeds have pharmacological qualities that include anti-inflammatory, analgesic, and anti-tumor effects. But there has never been a defined standard for *S. nux-vomica* seed or crude medication in Thailand.

Furthermore, the primary alkaloids in *S. nux-vomica* seeds, strychnine and brucine, have been employed as rodenticides and are said to be toxic.

KEYWORDS: *Strychnos Nux Vomica*, Strychnine, Brucine, Rodenticides, Paralysis.

INTRODUCTION

The *Strychnos nux-vomica* tree, often known as the vomiting nut or the poison nut tree, is the source of the homeopathic remedy known by the common name *nux vomica*.^[1] The primary component of this natural treatment is the tree's seeds.^[2] But the seeds also contain brucine and strychnine, both of which are poisonous in high concentrations. *Nux vomica* is used by people for a number of conditions.

A tree is called *Nux vomica*. Medicine is made from the seed. *Nux vomica* includes two poisonous substances: brucine and strychnine. *Nux vomica* is used to treat a variety of ailments, including migraines, erectile dysfunction (ED), stomach edema, constipation, nervousness, and anxiety.^[3] However, these claims are not well supported by scientific research. *Nux vomica* is dangerous as well.^[4]

The extract known as *nux vomica*, which comes from the seeds of the *Strychos nux-vomica*, also known as the strychnine tree, is used in homeopathic and conventional medicine to treat a variety of ailments, such as cancer and heart disease.^[5] The poisonous alkaloids strychnine and brucine, which are either prohibited or highly restricted in most countries, are found in *Nux vomica*. Neuromuscular hyperexcitability accompanied by agitation and muscle spasms, convulsions, rhabdomyolysis, metabolic acidosis, respiratory arrest, and cardiac arrest are the symptoms of *Nux vomica* poisoning.^[6] There is no evidence linking *Nux vomica* consumption to liver damage or increases in serum aminotransferases.

How does it work ?

Strychnine and other substances that impact the brain and produce spasms in the muscles are present in *Nux vomica*.^[7] Convulsions and even death may result from this. Even at tiny enough doses to cause symptoms, strychnine can still pose a major threat. With prolonged usage, especially in those with liver illness, trace levels of strychnine accumulate in the body. Within a few weeks, this can result in death.^[8] Laboratory tests are used to diagnose strychnine toxicity.

Large amounts of *nux vomica* are harmful. There aren't many extensive research on the potential advantages of *nux vomica*. It is important to remember that some existing research may concentrate on a single plant component, such as a leaf, bloom, or seed. As a result, not every portion of the plant will experience the same outcomes.^[9]



Fig no 1: Nux Vomica Seeds.

Prospects Benefits

Possible benefits of *nux vomica* include

Antioxidant effects

Nux vomica is a strong antioxidant due to a variety of distinct components, according to a Chinese research.^[10] *Nux vomica* may offer certain advantages, as this study suggests. The same study does, however, also demonstrate that excessive quantities of the two main active ingredients, strychnine and brucine, are toxic.^[11]

Pain Relief

Analgesic, or pain-relieving, effects of *nux vomica* leaf extract were shown to be promising in a 2015 research. According to the experts, the plant's antioxidants may be to blame for This. Still, the seeds—not the leaves—are the source of the homeopathic remedy.^[12]

The consequences of eliminating a large portion of the strychnine from the seed were examined by other researchers. According to their research, *nux vomica*'s analgesic and anti-inflammatory properties were enhanced by the removal of this particular component.^[13]

According to the experts, the presence of brucine was most likely the cause of this. In a model animal, brucine decreased edema and pain indicators. To find out if it has the same impact on humans, more study is required.^[14]

Diabetes

Research on the potential therapeutic benefits of *nux vomica* for diabetes was conducted in 2012. An extract from the seeds outperformed the control material in blood sugar regulation, according to studies done on an animal model.^[15]

Other proposed benefits

Nux vomica is said by some homeopathic medicine practitioners to be effective in treating a variety of ailments, such as: Allergies, fever, insomnia, numbness in the hands or legs, hangovers, digestive issues, such as heartburn and nausea, headaches and migraines, constipation, light sensitivity, irritability or moodiness, stress, back pain, menstrual problems, male infertility. Nevertheless, these assertions are not well supported by the available data. Moreover, strychnine, a toxin and pesticide, is listed as a chemical threat for *nux vomica* by the US Centers for Disease Control and Protection (CDC).^[17]

Uses & Effectiveness

Insufficient Evidence for Nerve damage in the hands and feet induced by cancer medication therapy. *Nux vomica* may, in the short term, help to somewhat relieve nerve discomfort in the hands and feet, according to extremely preliminary studies. However there is a risk while consuming *nux vomica*.^[18]

Side effects and risks

Nux vomica can have serious side effects. The substance may damage the central nervous system, which might result in symptoms like: a stiff neck, stiff facial muscles, cramps, anxiety, restlessness, blue skin, excitability and fast reflexes, Convulsions.

Preventions

Individuals who take bigger dosages or longer periods of time while taking *nux vomica* may be more susceptible to experiencing adverse effects. *Nux vomica* should not be used by women who are pregnant or nursing since experts are unsure of its potential effects on the growing fetus or infant.

Mechanism of Action

Glycine and acetylcholine receptors are antagonistic to strychnine, a neurotoxic. It mostly affects the spinal cord's motor nerve fibers, which regulate the contraction of muscles. Neurotransmitters attach to receptors on one end of a nerve cell to cause an impulse. When an inhibitory neurotransmitter like glycine is present, more excitatory neurotransmitters need to attach to receptors in order for an action potential to be produced.^[22] Glycine predominantly functions as an agonist of the ligand-gated chloride channel known as the glycine receptor, which is found in neurons in the brain and spinal cord.^[23]

What strychnine is

A white, crystalline powder with no smell and a bitter taste, strychnine can be swallowed, inhaled, or injected intravenously (straight into a vein) when combined with a solution.^[26] Due to its potency, strychnine can cause serious side effects in humans with just a modest dosage. Severe severe health consequences, including death, can result from strychnine intoxication.

Where can one locate and utilize strychnine?

Strychnos nux-vomica is the main naturally occurring source of strychnine. South Asia (India, Sri Lanka, East Indies) and Australia are home to this plant. Many human illnesses were treated with strychnine when it was first made accessible as a tablet. Mostly employed as a pesticide these days, strychnine is utilized to kill rats in particular.^[27]

How strychnine works

The amount and mode of strychnine exposure, as well as the individual's health at the time of exposure, determine how severe the poisoning is. Strychnine inhibits the substance that regulates nerve impulses to the muscles from functioning correctly. The hormone that regulates nerve messages functions similarly to the body's muscle "off switch." The body's muscles spasm severely and painfully when this "off switch" is malfunctioning.^[29]

Early symptoms and indicators of exposure to strychnine

Symptoms of poisoning often arise 15 to 60 minutes after strychnine is consumed (swallowed). The indications or symptoms listed below will appear in those exposed to low to moderate levels of strychnine by any method: Agitation, Apprehension or fear, Ability to be easily startled, Restlessness, Painful muscle spasms possibly leading to fever and to kidney and liver injury, Uncontrollable arching of the neck and back, Rigid arms and legs, Jaw tightness, Muscle pain and soreness, Difficulty breathing, Dark urine.

Treatment / Management

Treatment mainly consists of supportive care with endotracheal intubation when needed to secure airway. Gastric lavage or activated charcoal may be explored in ingested materials that show acute symptoms during the first several hours. GIT cleaning should be done carefully as manipulating the patient might cause convulsions.^[30]

Pearls and Other Issues

The white substance called strychnine, which is used to "cut" illegal drugs, has been found in both cocaine and heroin. Strychnine poisoning symptoms appear quickly whether the substance is breathed, snorted, or injected. A patient exhibiting opisthotonic posture following illegal drug use may have strychnine poisoning.^[30]

CONCLUSIONS

Recovery is often complete in cases of mild to moderate exposures, with no musculoskeletal or neurological aftereffects. Recovery times may be extended and result in lifelong incapacity for those who experience significant neurological or musculoskeletal problems. (8)(Achievement V).

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