ABSTRACT

Strychnos nux vomica is a commonly used upvisha in many ayurvedic preparations. It is used as a content of many Ayurvedic medicines which are used in treatment of many diseases like abdominal pain, upset stimuli, depression, insomnia, chronic respiratory diseases and so on. Many studies have been conducted on SNV and some properties of SNV are discovered which is found to be very useful like anti hyperglycaemic action, apoptotic action etc. But before using it as a medicine the proper detoxification is needed. If it is not done properly the adverse reaction may occur. In this article we are going to study SNV, its recent advances with its pharmacotherapeutic perspectives. Through this article we will study Properties of SNV with ayurvedic and modern perspectives, therapeutic uses of SNV with ayurvedic and modern perspectives.

KEYWORDS

Nux vomica, Recent Advances, Pharmacotherapeutic, Apoptotic effect
INTRODUCTION

As per ancient system of medicine this plant belongs to upvisha category (sthavar vanaspatik visha) and is also known as poisonous nut tree. Since ancient time it has been used as a ayurvedic remedy for various diseases. Basically SNV is deciduous to India and South east Asia. It is found all continents of India\textsuperscript{18}. It is medium sized tree belonging to loganiaceae family. It is a major source of highly poisonous intensive bitter alkaloid strychnine and Brucine.

This poison is used to kill bats, wild dogs, foxes and rodents. Accidental poisoning is due to breathing of powder or absorption through skin. Its absorption takes place through all mucus membrane. After that it is taken by liver and muscle cells. 80% of absorbed poison is oxidized in liver. Excretion of poison takes through kidney, bile, milk and saliva. After death it may be found in cadaver up to 4 years\textsuperscript{10}.

This article is based on review of Ayurvedic as well as modern scriptures and textbooks related to subject and related matter on Pharmacotherapeutic significance of drug and the collection of recent advances recent advances. Information is collected from old Ayurvedic Samhitas, old ayurvedic literature, nighantus and recent advances are collected from internet.

AIM

To study Strychnus nux vomica and its recent advances with its Pharmacotherapeutic perspectives.

OBJECTIVES

1. To study the properties of SNV through Ayurvedic literature.
2. To study the properties of SNV through modern literature.
3. To study pharmaco therapeutic uses of SNV from Ayurvedic perspectives.
4. To study pharmaco therapeutic uses of SNV from modern perspectives.

LITERATURE REVIEW

Properties of kuchala (Strychnos nux-vomica) according to various literature of Ayurveda has been mentioned in tabulation form in table no.1.

MEDICINAL DOSES

60 – 120 mg detoxified powder of seeds _ Gogate\textsuperscript{2}
1/4Ratti _ Rastarangini\textsuperscript{19}
15-30 mg strychnine_ parikh\textsuperscript{1}

FATAL DOSE

50 – 100 mg powder of seeds – Reddy\textsuperscript{10}
1-2 crushed seeds (15-30 mg of strychnine)\textsuperscript{14}
AYURVEDIC ANTIDOTE\textsuperscript{21}-Opium, Tobacco, Camphor, Ganja

PHYTOCHEMISTRY/ CHEMICAL CONSTITUENTS\textsuperscript{13}

Nux vomica contains total 13 alkaloids among those the major are strychnine, it is a major source of strychnine which is highly poisonous alkaloid. Kuchala seeds contain 2.6-3% alkaloids. Out of which strychnine is 1.25%-1.5%, Brucine is 1.7% and rest are Vomicine, Kajine and novacine (N-methyl, Psudo brucine, strychnine and isostrichnine, Cuchalocide, loganic acid, hemidesmine).

PROPERTIES OF NUX VOMICA

<table>
<thead>
<tr>
<th>Character</th>
<th>Raj nighantu\textsuperscript{6}</th>
<th>Ras tarangini\textsuperscript{21}</th>
<th>Bhawprakash\textsuperscript{4}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ras</td>
<td>Tikta katu</td>
<td>Katu</td>
<td>Tikta</td>
</tr>
<tr>
<td>Guna</td>
<td>Raksha, laghu, tikshna</td>
<td>-</td>
<td>Lghu(lightness)</td>
</tr>
<tr>
<td>Vipya</td>
<td>Katu</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Virya</td>
<td>Ushna( Hot)</td>
<td>Atyant ushma( very hot)</td>
<td>Shtal (cool)</td>
</tr>
<tr>
<td>Prabhav</td>
<td>Kushta vinashanam(antileprotic)</td>
<td>Nadishul nibarhanam(neurogenic pain killer), Amlapittahar</td>
<td>Grah( ), Madkarak</td>
</tr>
</tbody>
</table>

DETOXIFICATION PROCESS/ SHODhana

1. \textit{Swedan} (steaming) of seeds are done in \textit{dolayantra}(ancient instrument for steaming) with kanji (sour liquid), then coats are removed after that seeds are roasted in ghee, powder is made in crucible and stored in glass jar\textsuperscript{16}.

2. Seeds are soaked in \textit{gomutra} (cow urine) for 7 days after that seed coats are removed, seeds are boiled in cow milk and then seeds are roasted in cow ghee.

3. Seeds are soaked in \textit{kanji} (sour liquid) for 3 days, coats are removed and seeds are dried in sunlight, powder is made\textsuperscript{20}.

KALPA OF KUPILU

1. \textit{Shulharan yoga}
2. \textit{Agnitundi vati}
3. \textit{Ekang veer rasa}
4. \textit{Shulharan yoga}
5. \textit{laxmivilas rasa}

MEDICINAL USES

1. \textit{Vatvyadhi} _ proper detoxified kuchala is used in various ayurvedic medicines like laxmivilas rasa, agnitundi vati, on vata vyadhi like facial paralysis,neuralgia, anti-inflammatory, pain killer, \textit{kaphahara}, \textit{kasahara}, energizer,antileprotic, \textit{kusthaghna}, \textit{kandughna}, \textit{jantunashana}, \textit{vrashodhana}.

2. Respiratory stimulant_ it increases respiratory rate and tidal volume.

3. Emmanguard_ stimulate and increase menstrual flow and makes regularmenstruation and white discharge, yellow discharge with pain.

4. Abortificient-it cause abortion when taken in large doses.

5. Antidiabetic\textsuperscript{24} - It can be used as an anti hyperglycemic. When all other herbal
medicines fails to maintain normal blood sugar level at the time it helps to relieve diabetic symptoms. But it should not be used for more than two months. After completing 2 months the medicine should be discontinued. The drug work according to its prabhav (principle of nature of drug). *Kapha vata* dominated diseases can be specially cured with this drug.

6. **Anticancerous**20 - The chemotherapy which is commonly used now a days in the treatment of cancer, is highly toxic in nature and it may show very adverse effect also. Multiple myeloma is an incurable haematological malignancy with high incidence rate in elders. SNV extract promotes anti proliferative activity in dose and time dependant manner. Anti proliferative and cytotoxic activity is performed because of the alkaloids strychnine and brucine.

7. **Apoptotic effect of brucine on hepatocellular CA**9 - Brucine which is one among the four alkaloids exhibited strongest toxic effect the apoptotic action of Brucine and its mechanism to cause HePG2 cell apoptosis. Mechanism is as follows

- HePG2 cell apoptosis shrinkage
- DNA fragmentation
- Cell cycle arrest

8. **Peristaltic moments** - The mixture of alkaloids is used as GI stimulant. It increases appetite by stimulation of peristalsis. Strychnine alkaloid increase flow of gastric enzymes. So it is used in chronic diarrhea and constipation.

9. **H pylori infection** - A study suggested that influence of nux vomica and callenduala officinalis ethanol extract of both plants might be potent inhibitor of H-pylori induced gene expression.

10. **Analgesic and anti inflammatory**22 - The study on brucine and brucine - N- oxide extracts from the seeds of SNV, shows significant protective activity against thermic and chemical stimuli. Brucine-N-oxide shows inhibitory effect than Brucine in carrangeenan induced leg oedema model. While both shows significant results i.e. prostaglandin inhibition and inhibition of E2 receptors. The result suggests involvment of central and peripheral mechanism in pain modulation and anti inflammatory action.

11. **Immunomodulatory**21 - the result of a study confirms the suppressive activity of SNV on allergen specific IgE antibody response and suggested the local application for allergic conditions. It decreases weakness of body by reducing dhatu shaithilya and by performing Apoptotic cell death.
rasayana karm in adults. According to dr. Gogate it has HIV inhibition activity\textsuperscript{21}.

**DISCUSSION**

As we know SNV is an herb known since very ancient times. It has medicinal as well as spiritual impotence. People born in *Ashwini nakshatra* worships this plant hence it is known as plant of *AshwiniNakshatra*. Rodents are killed by using seeds of this plant\textsuperscript{12}. SNV belongs to upvisha category (less toxic poisons) according to Ayurveda\textsuperscript{17}. In modern toxicology it belongs to the category of neurotoxic spinal vegetablepoison\textsuperscript{15}. This poison comes under rules and regulation of drug and cosmetic act 1940. Though the plant belongs to poisonous platcategory but has great importance in ancient system of medicines. It works as a medicine when it is taken in prescribed doses. The process of detoxification reduces its toxicity. Therefore it should be always taken in detoxified form.

Now a day’s globalization of Ayurvedic medicine increasing, Ayurveda is proven as a big industry for medicine. Many researches carried out in the field of Ayurveda are very much beneficial for the field of medicine. In the present era, SNV is not supposed to be a traditional medicine only but it is also using as a medication for treating of some challenging disease like CA, diabetes, respiratory diseases and so on. Chemotherapy used in the treatment of CA is a kind of poison. In future if researches will be carried on SNV, it may replace with use of Brucine as a medication for the treatment of CA. It is also a good anti hyperglycemic drug\textsuperscript{13}.

In some scripts different properties of SNV are mentioned. In this modern era we can standardize the drug and know their exact properties by using modern tools. In this article information about SNV has collected from Rastarangini, sharangdhar samhita, Bhavpraksh nighantu, etc texts of Ayurveda and modern literature collected from internet and various books of toxicology like Parikh, singhals toxicology, Reddy.

While studding SNV through different Ayurvedic and modern books it is found that many similar things are mentioned by both literatures like Immunomodulatory action shows similarity with Rasayana property\textsuperscript{21} of SNV, other properties also shows similarity. This kind of similar work has been carried out in our institute\textsuperscript{23} on Semicarpus Anacardium. And such studies are a milestone in drug development program.

Drug development program is very much dependant on herbal medicines hence SNV
have big scope for research in field of medicines. This article gives basic information regarding to SNV and its Pharmacotherapeutic uses. It may prove helpful in increasing the knowledge of students, practitioners and researchers also.

**CONCLUSION**

In this article most of the information regarding the nux vomica has been collected. It proves to be helpful to students and doctors practicing Ayurveda. Pharmacotherapeutic properties of SNV are also discussed in this article, which shows there are lots of newly detected uses of SNV and still there is lots of scope for further research for this drug. It may also prove to be helpful to treat some difficult disease like C.A. and diabetes. Therapeutic significance provided, will be helpful to development of herbal medicines. Ultimately it will be helpful for drug development programme.

**Abbreviations**- SNV – Strychnos nux vomica
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