

Phytochemical and medicinal properties on *Strychnos-nux-vomica* (L).

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Abstract

Strychnos nux-vomica L. (Loganiaceae) is a deciduous tree that grows in tropical areas and is distributed throughout India and Southeast Asia. The dried seed of this plant *S. nux vomica* has been applied clinically in Chinese medicine for hundreds of years. *S. nuxvomica* is a non edible tree with a strong content of two poisonous alkaloids, strychnine and brucine. *S. nux-vomica* which belongs to the family loganiaceae also called Kanjiram is a medium-sized tree. Other names of *S. nux-vomica* are Kanjiram, Kuchla, Kupilu. Phytochemical analysis revealed the presence of alkaloid, carbohydrate, tannin, steroid, triterpenoid and glycoside in the extract. Seeds of *Nux vomica* used as nervine tonic, alexiteric, aphrodisiac, anthelmintic, digestive, purgative and stimulant. Detoxified *S. Nux vomica* seeds used in various Ayurvedic drugs like Agnitundi vati, Navjeevan Rasa and vishatinduka vati as an important ingredient. This study presents a review on the Phytochemical and Medicinal properties of *S.nux vomica* L.

Key words: Phytochemicals, alkaloids, carbohydrates, Medicinal uses, *Strychnos nux-vomica* (L).

Introduction

Since the synthetic drugs are more costly and lead to side effects the usage of herbal medicines are getting importance due to promising results and less or no side effects (Mathivanan *et al.*, 2014-15). Traditional use of plant remedies for number of ailments is seen across nations. *S. nux - vomica* is an evergreen tree native to South East Asia and India belonging to the family Loganiaceae. It is medium sized tree found mostly in open habitats. Two poisonous alkaloids, Strychnine and brucine are found in this tree (Magdalin Joy and Reginald Appavoo, 2014). *S. nux-vomica* which belongs to the family loganiacea is a medium-sized tree with a short thick trunk. Other names of *S. nux-vomica* are Kanjiram, Kuchla, Kupilu (Mity Thambi and Tom Cherian, 2015). Moreover, the plant possesses analgesic and anti-inflammatory properties, anti-convulsant activity, anti-tumor effects, anti-amnesic activity, anti-diarrhoeal activity, immunomodulatory effect, anti snake-venom activity hepatoprotective and anti-cholestatic activities (Mahapatra Arun kumar *et al.*, 2012).

About the plant

Classification

Class : **Dicotyledones**
Order : **Gentinales**
Family : **Loganiaceae**
Genus : ***Strychnos***
Species : ***nux-vomica* L.**



Fig1: plate of *Strychnos nux-vomica* (L).

Plant morphology

The wood is dense, hard white, and close-grained. The branches are irregular and are covered with a smooth ashen bark (Harry, 1968). The young shoots are a deep green colour with a shiny coat. The leaves have an opposite decussate arrangement, short stalked, are oval shaped, also have a shiny coat and are smooth on both sides. The leaves are about 4 inches (10 cm) long and 3 inches (7.6 cm) wide. The flowers are small with a pale green colour with a funnel shape. They bloom in the cold season and have a foul smell. The fruit are about the size of a large apple with a smooth and hard shell which when ripened is a mild shade orange colour (Mity Thambi and Tom Cherian., 2015).

Phytochemicals

Phytochemical investigation of the extract led to the isolation and characterization of five phenolic compounds. Alkaloids, triterpenes, oils, fats, phenols, tannins and flavonoids were Present (Magdalin Joy and Reginald Appavoo, 2014). *S.*

nux-vomica leaves extract led to the isolation and characterization of five compounds; Kaempferol-7-glucoside 1, 7 Hydroxy coumarin 2, Quercetin-3-rhamnoside 3, Kaempferol 3-rutinoside 4, and Rutin 5. (Omayma *et al.*, 2015). Phytochemical analysis revealed the presence of alkaloids, carbohydrates, tannins, steroids, triterpenoids and glycosides in the extract. Total flavonoids and phenols content of *S. nux-vomica* L. extract was found to be 0.40 % and 0.43%. Metal analysis. Quantitative analysis was performed through HPTLC methods using strychnine and brucine as a standard marker. Phytochemical analysis revealed the presence of alkaloids, carbohydrates, tannins, steroids, triterpenoids and glycosides in the extract. Total flavonoids and phenols content of *S. nux-vomica* L. Extract was found to be 0.40 % and 0.43% (Dinesh Kumar Patel *et al.*, 2012).

Medicinal uses

The medicinal properties of *S. nux Vomica* L. are those of the alkaloid strychnine. It is used to elevate blood pressure (David *et al.*, 2002). The seeds are first immersed in water for five days, in milk for two days followed by their boiling in milk (Seema *et al.*, 2010). In India, the quality/toxicity of traditional medical crude and processed *Strychnos* seeds can be controlled by examining the toxic alkaloids using established HPLC methods and/or HPLC-UV methods. *S. nux-vomica* is also used in homeopathy. In the Indian system of medicine, the medicinal attribution of this species has been known for a long time. As per the traditional claims, the root

bark is used in cholera, leaves are used in chronic wounds and ulcers, and seeds are used as an appetizer, antiperiodic purgative, in asthma, diabetes, skin diseases etc., (Bhavya and Krishnamoorthy, 2014). The traditional processing methods of *S. nux-vomica* described in the Chinese pharmacopoeia were mainly relied on experience and the temperature of parching in sands was determined manually (Yujie Liu *et al.*, 2014).

Conclusion

S. nux-vomica leaves extract has a great value as a source of compounds for pharmaceutical applications. These studies provide valuable information for correct identification and selection of the drug from various adulterations. In future this study will be helpful for the quantitative analysis as well as standardization of the *S. nux-vomica* L. valuable information for correct identification and selection of the drug from various adulterations and provide valuable information for correct identification and selection of the drug from various adulterations. In future this study will be helpful for the quantitative analysis as well as standardization of the *Strychnos nux-vomica* L.

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