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ABRUS PRECATORIUS (ROSARY PEA) – MEDICINAL USES AND TOXICOLOGICAL OVERVIEW

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Abstract

Abrus precatorius, also known as Rosary pea is one of the valuable plant species native to Asia and Australia. Despite the number of health benefits, it is also being used as an ornamental plant. It is found to be effective in the treatment of migraine, inflammation, ulcers, wounds, throat scratches and sores, gonorrhea, jaundice, promotes hair growth and acts as abortifacient. Seeds and leaves of this plant are found to produce abrin, a deadly poison which is proven to be fatal for both humans as well as animals when consumed in greater amounts. Researchers have concluded that high temperature processing can lead to the destruction of toxicity to some extent though proper research needs to be conducted.

Key words : Abrin, health benefits, toxicity.

Introduction

Nature has always blessed humans by providing numerous valuable plant species. *Abrus precatorius* is also one of them. *Abrus precatorius* is also known as Rosary pea which belongs to the family *fabaceae* and is native to Asia and Australia. The plant has been used or various medical purposes since ancient times and also being used as ornamental plant. The plant grows up to a height of 10-20 ft and flowers bloom as bluish pink in color which forms clusters. *Abrus precatorius* resembles the tamarind leaves with 20- 40 leaflets. The plant grows well in slightly acidic soil to slightly basic which ranges from pH 5-8. The fruits of this plant are flat and like a pod which is 3-4cm long and 1.2 cm wide (Anand *et al*., 2010). It is widely propagated through seeds and used for many medicinal purposes. In India *Abrus precatorius* is seen in all over Himalayas and to the southern part too. The plant is found to be effective against the treatment of migraine, inflammation, ulcers, wounds, diabetes, tumor, throat scratches and sores, gonorrhea, jaundice, also promotes hair growth and acts as abortifacient (Bhakta and Das, 2020). But despite of the number of health benefits, people are unaware of the toxicological effects, seeds and leaves of this plant possess which are proven to be fatal for both animals and humans when consumed in more than measurable quantity.

Toxicology of *Abrus precatorius*

All the parts of the plant are toxic when consumed in overdose. The main toxin is produced by seeds also known as Abrin which is a protein based toxalbumin similar to snake venom. It inhibits the protein synthesis which results in cell death (Narayanan *et al*., 2005). When the person consumes the seeds of this plant as raw, it leads to vomiting, bloody diarrhea, abdominal pain, gastrointestinal bleeding, irregular pulse, weakness and dyspnea

(Karthikeyan *et al*., 2017) which can occur from 24 hours to 5 days of consumption. A number of cases are reported of *Abrus poisioning*, one such involves a 16 year old girl who unintentionally ate the crushed seeds of *Abrus precatorius*. On admitting to the hospital, she was identified with severe abdominal pain, red urine and black stools after 6 hours of the consumption (Huang *et al*., 2017). Researchers have concluded the high temperature treatment can cause an effect on lowering the toxicity to some extent which will be fit for consumption.

Table 1 : Chemical constituents of *Abrus Precatorius* (Bhakta and Das, 2020)

SN	Plant Parts	Chemical constituents	Medicinal purpose
1	 Leaves	Glycyrrhizin, triterpene glycosides, pinitol and alkaloids such as abrine, hypaphorine, choline and precatorine, Abruslactone, Abrusoside, Inositol	Anti-bacterial, Analgesic, anti-fungal, anti-tumor, anti-spasmodic, anti-diabetic, anti-migraine, abortifacient, acts against inflammation, ulcers, wounds, throat scratches and sores (Anant and Maitreyi, 2012).
2	 Flowers and roots	Glycyrrhizin and alkaloids like abrasine and precasine besides abrine, Abrol, Precol.	
3	 Seeds	Abrine, hypaphorine, choline and precatorine(alkaloids present in seeds), abricin, cholesterol, Abrus agglutinin, Saponin, Flavonoids, Abrectorin, Precatorin, Lectin, campestanol	

Conclusion

As far as the health benefits are concerned, *Abrus precatorius* is effective against the treatment of migraine, inflammation, ulcers, wounds, diabetes, tumor, throat scratches and sores, gonorrhea, jaundice, hair growth and acts as abortifacient. The toxicity as a whole is concerned with seeds of the plant and researchers have concluded the heat processing technique as one of the best way to lower down the toxic effects for a safe consumption.

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