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Phytochemical and pharmacological study on *Abrus precatorius*

Sunita Verma

Maharaja Ganga Singh University, Bikaner, India

ABSTRACT

Abrus precatorius is one of the most important herb belonging to Fabaceae family. It is native to India and grows in tropical and subtropical areas of the world. It used as anti-diabetic, anti inflammatory, anti fertility, anti bacterial, anti fungal. Therefore the present review is aimed to highlight the botanical characters, its Phytochemical and pharmacological activities in various diseases.

Key words: Traditional, medicinal, anti diabetic, anti fungal, anti inflammatory.

INTRODUCTION

India is one of the largest producers of medicinal herbs and is rightly called the botanical garden of the world as it is sitting on a gold mine of well-recorded and traditionally well practiced knowledge of herbal medicine. About 17,000 species of Indian flora about 7500 species of higher plants are reported to possess medicinal value and in other countries it is projected about 7% and 13% [1]. Among the traditional system of medicine *Abrus precatorius* Linn. (Fabaceae) commonly known as Indian Liquorice, is a climbing shrub found in subtropical regions of India. It is a beautiful deciduous, climbing plant, which belongs to the family of Fabaceae. Its seeds have remarkably uniform weight of 1/10th of a gram, therefore were used by goldsmiths as standard weights for weighing gold and silver in previous time.The plant is used in some traditional medicine to treat scratches, sores and wounds caused by dogs, cats and mice, and are also used with other ingredients to treat leucoderma, tetanus and rabies. They are ground with lime and applied on acne sores, boils and abscesses. The seeds are considered abortifacient [2]. In Siddha medicine, the white variety is used to prepare oil that is claimed to be an aphrodisiac. A tea is made from the leaves and used for fevers, coughs and colds. Seeds are poisonous and therefore are used after mitigation. The plant is also used in Ayurveda and is said to promote hair growth. It is sometimes used as an ingredient in Indian hair products.

CLASSIFICATION

Kingdom	: Plantae
Phylum	: Spermatophyta
Subphylum	: Angiospermae
Class	: Dicotyledonae
Order	: Fabales
Family	: Fabaceae
Subfamily	: Faboideae
Genus	: Abrus
Species	: Abrus precatorius

SYNONYMS NAMES

English : Gunja
Hindi : Gunchi
Gujarati : Gumchi
Punjabi : Mulati
Urdu : Gunchi
Rajasthani : Chirmi
Marathi : Gunj

BOTANICAL DESCRIPTION

It is a beautiful, much-branched, slender, perennial, deciduous, woody, prickly twining or climbing herb. Stem cylindrical, wrinkled, bark smooth-textured, brown. Leaves stipulate, pinnately compound, turgid, oblong, obtuse, truncate at both ends, appressed hairy. Flowers in auxiliary racemes, shorter than leaves, pink or pinkish-white. Pods, turgid, oblong, appressed hairy, with a sharp deflexed beak, silkytextured, 3 to 5-seeded [3].

CHEMICAL CONSTITUTES

Abrus precatorius is rich in various chemical constituents such as abrol, abrasine, precol and precasine from the roots. Seeds are rich in several essential amino acids like serine, alanine, valine, choline and methyl ester [4]. Seeds are poisonous and contain principle compound Abrine, Abraline, Abrasine, Abricin, Abrin, Abrusgenic-acid, Abrusgenic-acid-methyl-ester, Abruslactone, Abrussic-acid, Anthocyanins, Calcium, Campesterol, Choline, Cycloartenol, Delphinidin, Gallic-acid, Glycyrrhizin, Hypaphorine, N, N-dimethyl-tryptophan, N,N-dimethyl-tryptophan-metho-cation-methyl-ester, P-coumaroylgalloyl glucodelphinidin, Pectin, Pentosans, Phosphorus, Delphinidin, Gallic-acid,, Glycyrrhizin, Hypaphorine, N,N-dimethyl-tryptophan, N,N-dimethyl-tryptophan-metho-cation-methyl-ester, P-coumaroylgalloyl-lucodelphinidin, Pectin, Pentosans, Phosphorus, Picatorine, Polygalacturonic-acids, Precasine, Precatorine and Protein Trigonelline [5].

PHARMACOLOGICAL ACTIVITIES

1. Anti diabetic activity

The anti-diabetic effect of chloroform–methanol extract of *Abrus precatorius* seed (50mg/kg) was studied in alloxan diabetic rabbits. The percentage reduction of blood glucose was found after treatment with chloroform – methanol extract at different intervals which shows that the chloroform – methanol extract of *Abrus precatorius* seed has anti-diabetic properties having Trigoneline similar to that of chlopropamide [6].

2. Anti fertility activity

Chloroform/methanol extract of seeds administered subcutaneously to female rats at a dose of 50.0 mg was active [7]. Similar results were obtained in experiment on male rats when ethanol extract of seeds administered intra-gastrically at a dose of 100.0 mg/kg and 250.0 mg/kg for 60 days. No pregnancies were reported for the 20 females paired with 10 males [8].

3. Antispasmodic activity

The ethanol (95%) extract of dried leaves, was active on the phrenic nerve-diaphragm of rats against nerve stimulation [9].

4. **Anti-malarial activity**

An isoflavanquinone, abruquinone, was isolated from the extract of aerial parts and exhibited anti-malarial activity [10]. Antiplasmodial activity and cytotoxicity in the assessment of antimalarial activity was evaluated and *Abrus precatorius* extract presented an IC 50 value below 20 g/ml [11].

5. Anti-bacterial activity

Abrus precatorius belonging to the family *Fabaceae* was screened for potential of antibacterial activity against four medically important human pathogen namely *Staphylococcus aureus*, *Streptococcus pyogene*, *Bacillus subtilis*, *Pseudomonas aeruginosa* [12]. The antibacterial activity of aqueous and ethanol extracts were determined by agar disc diffusion method [13].

6. Neuromuscular blocking activity

The ethanol (95%) extract of dried leaves, at a concentration of 0.5 µg/ml, was active on phrenic nervediaphragm [14].

CONCLUSION

It is seen that *Abrus precatorius* is a very important plant for its large number of medicinal properties which includes antidiabetic, nephroprotective, neuroprotectvive, analgesic and many more. Thus *Abrus precatorius* is a multipurpose medicinal plant.

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