

SHORT COMMUNICATION

# INVESTIGATION OF THE PHARMACOLOGICAL ACTIVITY OF ETHANOLIC EXTRACT OF *ABRUS PRECATORIUS* SEEDS

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**The ethanolic extract of the *Abrus precatorius* seeds was evaluated for possible bronchodilator activity by using various *in vivo* and *in vitro* models in guinea pigs. Animal studies involved the use of histamine induced broncho-constriction in guinea pigs. Results showed reduced activity at lower concentration but significant protection at higher doses.**

**Key words:** *Abrus precatorius*, Acetylcholine, Histamine, Bronchodilation.

## INTRODUCTION

Plants and their parts have been remained as reservoir of bioactive components since decades (Jain *et al* 2011; Jenny *et al* 2012; Deb *et al* 2013). *Abrus precatorius*, commonly known as jequirity, Crab's eye, rosary pea, precatory pea or bean, is a slender, perennial climber that twines around trees, shrubs, and hedges. The plant is a slender twiner with alternately placed compound leaves. *Abrus precatorius* L. (Fabaceae) is a vine originally native to India that is now commonly found throughout the tropical and subtropical parts of the world (Morton, 1982). It grows best in fairly dry regions at low elevations. Leaves, roots and seeds are used as a medicament in traditional system of Indian medicine for antihelminthic, antioxidant, antidiarrhoeal, antiemetic and inhibits intestinal motility (Gul *et al* 2013). Seeds of plant (**Figure 1**) are used for the treatment of diabetes and chronic nephritis (Manago and Alumanah, 1982). It grows by the seashore among the undergrowth and in hedges. Seeds when broken or chewed or when the external coat is removed are toxic.

The highly attractive seeds are sought after by children for beads. They are sometimes made into necklaces and rosaries. Seeds are extremely



**Fig. 1.** Seeds of the plant *Abrus precatorius*

poisonous if cracked; a single one, if swallowed can be fatal. The phytochemical constituents of the plant are well established and abrin, a highly toxic protein, obtained from the seeds is amongst the numerous compounds isolated from the plant. Other compounds include abrusoside E, abrusgenic acid, and other known compounds such as cycloartenol, gallic acid and glycyrrhizin<sup>5</sup>. A survey of literature has revealed some scientific justification for some of the traditional uses of the plant including as antimicrobial and antimalarial potential.

However, there was no documented evidence of the use of the plant for the management of asthma, so, present investigation was directed toward evaluation of bronchodilator activity of *Abrus precatorius*.

## MATERIALS

The seeds of *Abrus precatorius* were collected in July month at Shankrankovil, Tamilnadu in the southern region of Krishnankovil. They were authenticated by Dr. D Stephen, Department of Botany, The American College, Madurai.

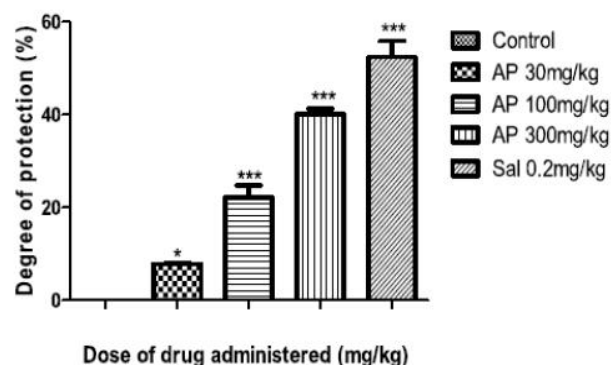
## METHODS

The seeds were dried at room temperature and milled into a coarse powder using a blender. Three hundred grams of the powdered material was cold macerated with 2 litres of ethanol for 48 h. It was filtered and the filtrate reduced to a dark brown extract using a rotary evaporator. This was poured into a petri dish and dried in a desiccator. The percentage yield was 20.5% w/w. The dried ethanolic extract was labeled AP and stored in a refrigerator (4°C) until needed for the bioassay. Twenty guinea pigs of either sex weighing between 250 g and 500 g were utilized for the study. The experiments were carried out early in the morning when the animals had not eaten, to facilitate easy administration and effective absorption of the drugs. The twenty guinea pigs were divided into four groups, A, B, C and D. The five animals in each group were subjected to the histamine challenge. Group A received 30 mg/kg of AP, group B 100 mg/kg of AP, group C 300 mg/kg of AP and group D, the standard bronchodilator salbutamol at a concentration of 0.2 mg/kg body weight (which is the normal dose for humans). The drugs were administered 30 min before the PCTs were determined. The PCTs were used again to determine the degree of protection, each drug provided to the animals as compared to the positive control of salbutamol.

## RESULTS

In the *in vivo* assay, the present findings showed that ethanolic extract of *Abrus precatorius* seeds prolonged the PCT in the guinea pigs following histamine induced bronchospasm. The range of degree of protection was between 7.74% (for a

dose of 30 mg/kg) and 41.62 % (for a dose of 300 mg/kg). The maximum percentage protection calculated was 41.62% and was obtained at 300 mg/kg dose of the AP. The broncho relaxation effect increased with increasing dose of the extract as shown in the **Figure 2**. The positive control drug, salbutamol gave the maximum protection of 47.52%. The results suggested that the *Abrus precatorius* seeds extract may have bronchodilator activity justifying the traditional uses of the plant in the management of asthma.



**Fig. 2.** Degree of protection offered by the extracts of *Abrus precatorius* against histamine induced broncho constriction

## CONCLUSION

Present study showed the ethanolic extract of the plant is effective against asthma. From the results obtained, it can be deduced that the ethanolic extract of the *Abrus precatorius* seeds has bronchodilatory effect. The results of the study also demonstrated that the possibility of anti-histaminic, anti-cholinergic and adrenergic effects.

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