



Article : Antifertility potential of *Abrus precatorius* against male albino mice

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Abstract :

The effect of aqueous seed extract of *Abrus precatorius* on reproduction was studied in male albino mice. The study was divided into three groups of six animals each. The first group (I) received distilled water and served as control. The second and third group (II & III) of animals were administered the aqueous seed extract daily at 250mg/kg body weight and 300mg/kg body weight respectively for 30 days. A dose related reduction in testicular sperm count and the motility were observed. The result showed that *Abrus precatorius* has effect on male reproduction affecting the male reproductive system.

Keywords: *Abrus precatorius*, sperm motility, sperm count.

Introduction

Rising human population throughout the world more particularly in developing and underdeveloped countries has detrimental effects on life supporting system on earth. Fertility regulation comprising contraception and management of infertility forms an important component of reproductive health (Allag et al. 2002). Though considerable progress has been made in the development of highly effective, acceptable and reversible methods of contraception among females, progress on males are still limited (R.C. gupta et al. 2006). With recent progress towards a better understanding of male reproductive physiology there is a need to develop new contraceptive modalities for male. Several potential approaches for induction of infertility have been investigated over a long period including hormonal and chemical approaches. The chemical compounds affecting testicular function include different groups like steroidal and non-steroidal among them are Danazol, Depot medroxy progesterone acetate (DMPA), Cyproterone acetate (CPA) Levenogestral, Melatonin, Serotonin. But application of above compounds has been seriously questioned owing to various hazards as they were proved toxic on both the short as well as long term use in the reproductive system. (Prasad M R N et al.).

Presently herbal based medicines are gaining popularity and about 80% of the world population depends on plant derived medicine for the first line of primary health care because it has minimum or no side effects. (Verma et al. 2002)The fertility control with plant products has been reported in the ancient literature of indigenous system of medicine. They acted either by preventing implantation or by suppressing spermatogenesis (Chaudhary R.R. et al. 1966).A large number of plant species with anti-fertility effects has been screened in India and China and were subsequently fortified by National and International agencies (WHO, 2000).However the search for effective, safe and orally active plant products are yet to be needed for fertility regulation.

Abrus precatorius is a slender, perennial climber that twines around trees, shrubs, and hedges. It is a legume with long, pinnate-leafleted leaves. It is also known as *Gunja* in Sanskrit and *Ratti* in Hindi. The plant is best known for its seeds, which are toxic due to the presence of abrin. The plant is native to Indonesia and grows in tropical and subtropical areas of the world where it has been introduced. It has a tendency to become weedy and invasive where it has been introduced.

The present study was carried out to test the efficacy of spermicidal activity of aqueous seed extract of *Abrus precatorius* on male albino mice.

Material and Methods-

Seed extract preparation:

The seeds of *Abrus precatorius* were collected from Pune area. The seeds were cleaned with distilled water and aqueous extract was prepared.

Animals: Adult male albino mice weighing around 30g were procured from Institute of veterinary and Biological products, Pune and were kept in polypropylene cages (three in each). They were acclimatized to the laboratory conditions for a week and had free access to water.

Experimental Design

Group I: Control animals

Group II: The mice were treated with *Abrus precatorius* aqueous seed extract (250 mg/ kg body wt.,) for 30 days.

Group III: The mice were treated with *Abrus precatorius* aqueous seed extract (300 mg/kg Body wt.,) for 30 days.

Estimation of sperm motility and count

The spermatozoa were obtained by making small cuts in cauda epididymis and vas deferens and were placed in 1 ml of Ringer–Bicarbonate buffer. The sperm suspension was evaluated for sperm content and percent motility. The percent motility was determined by the progressive and non-progressive movement of sperms observed under a microscope. The sperm count was determined under Neubauer haemocytometer. To evaluate, the sperm abnormalities, the sperm suspension was stained with eosin, smear were made on slides, air dried and made permanent.

Results:

During the treatment with *Abrus precatorius* seed extract, no significant clinical and behavioral changes were observed in experimental groups. Similarly there was no significant change in the body weight and sex organ weight, namely testis and epididymis in all treated groups. The sperms of control group showed normal morphology, motility and count. In treated group of mice the cauda epididymal sperm parameters showed evidences of dose dependant toxicity. The sperm counts were decreased in group II and III animals. About 50% of the sperms had abnormal morphologies like coiling of tail,, fusion of tails of two sperms etc. The reduction of sperm count and sperm motility were higher in group III(300mg/kg body wt) when compare to group II(250mg/kg body wt.) and control group.

Groups	Body weight		Organ weight		Total count m/ml	Motility %
	Initial gm	final gm	Testis mg	Epididym mg		
Group(control)	27.62(±0.3821)	26.45(±0.3729)	108.85	18.10	3.8	67%
Group II	25.40(±0.2917)		107.95	17.20	3.1	47%

(250mg/kg body wt.)	23.60(\pm 0.3101)				
Group III (300mg/kg body wt.)	24.28(\pm 0.3721) 22.48(\pm 0.3928)	106.40	16.10	2.9	30%

Table 1: Effect of *Abrus precatorius* on Body weight, Organ weight, Sperm count and motility

Discussion

The treatment of animals with the seed extract of *Abrus precatorius* was very effective in producing the reversible sterility. For the male contraception it is not necessary to stop the spermatogenesis, but rather to eliminate the fertilizing ability of the spermatozoa by causing changes in the morphology or in the function of sperm (Niketani V. et al. 2000). The treated group of animals indicated that there is depletion in sperm count suggesting the alteration in sperm production in testes. Decrease in sperm motility suggests the alteration of sperm maturation in the epididymis. This result is also supported by Sinha (1990) who reported that seeds of *Abrus precatorius* cause testicular anti fertility effects and suppression of sperm motility in cauda epididymis.

In conclusion the results of present study suggested that *Abrus precatorius* seed extract causes marked alterations in the male reproductive organs. These seeds may be used as botanical contraceptive with further clinical trials.

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