

Original Research Article

Effect of *Melia azedarach* Bark Extract on Bark Extract on Reproductive Functions in Male Wistar Albino Rats

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Abstract: The antifertility activity of ethanolic bark extract of *Melia azedarach* (200 & 400mg/kg) was observed in male rats. The extract was administered once daily for 15 days to male Wistar albino rats. The male rats were allowed to mate with sexually active female of same strain and the % of pregnancy, number of implantation and number of viable fetuses was observed. Both the doses of *Melia azedarach* significantly decrease the % of pregnancy, number of implantation and number of viable fetuses in female rats compared to control rats. From the results it was concluded that ethanolic bark extract of *Melia azedarach* exhibits antifertility in male rats.

Keywords: *Melia azedarach*, Antifertility, Male rats and Implantations.

INTRODUCTION

Over population is one of the serious problems in the developing countries like India and that would be increased about 9.2 billion by the year 2050. In each year around 18 million people are adding to our total population. This increment imposes an extra burden on the community and it is also one of the leading causes of poverty and pollution in developing countries. Many countries have already banned the use of hormonal contraceptives because of its carcinogenic effects. The discovery of some herbal contraceptives, safe and sure is the need of the hour. Herbal contraceptives were used even by the primitive people of ancient civilizations to control fertility and prevent pregnancy [1]. Though, the conventional medicine has discovered some important antifertility agents (Contraceptive) for female, their popularity and utility among women is restricted due to some unwanted and troublesome effects. The common side effects include obesity, cholelithiasis, gastric trouble and carcinoma of breast and cervix, asthma and venous thrombo embolism. It is the time to search for safe alternative male contraceptive on herbal origin.

The development of fertility control on male can provide tremendous social and public health benefits. There are relatively few realistic approaches currently being pursued which include the suppression of sperm production, disruption of sperm maturation and/or function, and interruption of sperm transport [2].

Melia azedarach L. is a small to medium size deciduous tree or shrub of 5-15 meter in height, a close relative of Neem, from the Meliaceae family widely

distributed in tropical and subtropical countries. The *Melia azedarach* L contains a number of potential organic molecules i.e. flavonoids, terpenoids, steroids and anthraquinones [3]. Ethanobotanical survey reveals the use of *Melia azedarach* L in sciatica, lumbago, piles, cough, asthma, ulcers, wounds, diabetes, intermittent fever, post labor pain in uterus, amenorrhea and in leucoderma [4]. The leaves of *Melia azedarach* L has reported for various biological activities like, antimalarial, antimicrobial, antipyretic, Skin disorders, Analgesic and anti-inflammatory and antifertility. Seed possess antirhumatoidal activity, antibacterial and antiplasmodial activity. Bark has antibacterial, antipyretic and wound healing activities [5]. It was observed that alkaloids are the only phytoconstituents that may be responsible for altering the reproductive systems in animals & human. The alkaloids are rich in the bark of *Melia azedarach*. So the current study was focused to evaluate the antifertility activity of ethanolic bark extract of *Melia azedarach* in male rats.

MATERIALS & METHODS

Plant Material & Authentication

The barks of *Melia Azedarach* were collected from the outskirts of Pondicherry, in the month of May. The bark was identified and authenticated as *Melia Azedarach* by Prof. Dr. P. Jayaraman, Director, Plant Anatomy Research Centre, and Chennai. The voucher specimen was deposited in the herbarium for further reference.

Extraction

The collected barks were washed and shade dried. The shade dried barks were cut in to small pieces and grind in to coarse powder using mechanical blender. The coarse powdered bark was subjected to extraction using ethanol as solvent by maceration process. The extracts were concentrated by evaporating the solvent at low temperature and vacuum dried.

Animals

Male and female Wistar albino rats (150-180gm) and were obtained from the animal house of Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry. The animals were kept in polypropylene cages under room temperature, with 12-hour light and 12-hour dark cycle and were allowed to acclimatize for two weeks. The animals were provided commercial feed and clean drinking water *ad libitum*. The experimental protocols were reviewed and approved by the Institutional Animal Ethics Committee of the Institute.

Anti-Fertility Study

Experimental Design

Fifteen male rats were divided in to three groups of 5 each. Group I, served as control received 1ml/kg of 0.1% Carboxy Methyl Cellulose solution administered orally. Groups II & III rats were administered orally with ethanolic bark extract of *Melia Azedarach* at the doses of 200 and 400mg/kg respectively. All the test drugs were administered once daily for 14 days. Antifertility activity of ethanolic bark extract of *Melia Azedarach* was estimated in the male rats, by placing

each rat in an individual cage with two virgin untreated females of the same strain and allowed to mate. The male rats were left together for 15 days. On 16 day, the pregnant female rats were anesthetized under phenobarbitone sodium (45mg/kg., i.p). The uterine horns were dissected and incised at the greater curvature of the horns. The latter were examined for sites of implantation and number of viable foetuses was recorded [6].

STATISTICAL ANALYSIS

Results were expressed as mean \pm SEM. The data were analyzed by using one way analysis of variance (ANOVA) followed by Dunnet's 't' test using GraphPad version 3. P values < 0.05 were considered as significant.

RESULT

Antifertility activity of ethanolic bark extract of *Melia azedarach* was studied in male rats and the results were shown on table 1. The control non treated male animals showed 100% pregnancy, the implantation and number of viable fetuses were 8.42 \pm 0.53 and 5.62 \pm 0.36 respectively. The male animals treated with *Melia azedarach* bark extract at 200 and 400 mg/kg showed 40% and 20% of pregnant in female respectively. Both the doses of ethanolic bark extract of *Melia azedarach* significant decrease (P<0.001) the number of implantation to 3.44 \pm 0.16 and 2.63 \pm 0.01 respectively. The viable foetuses were also significantly decreased (P<0.001) by the *Melia azedarach* bark.

Table 1: Antifertility activity of ethanolic bark extract of *Melia Azedarach* in male rats

Drug Treatment	No. of Pregnant Female	No. of Implantation	No. of Viable Foetuses
Group I Control	10/10 (100%)	8.42 \pm 0.53	5.62 \pm 0.36
Group II <i>Melia Azedarach</i> (200mg/kg)	04/10 (40%)	3.44 \pm 0.16***	1.22 \pm 0.01***
Group III <i>Melia Azedarach</i> (400mg/kg)	02/10 (20%)	2.63 \pm 0.01***	1.21 \pm 0.01***

Values are in Mean \pm SEM (n=5)

*P<0.05, ** P<0.01 and *** P<0.001 Vs Control

CONCLUSION

From the above results, it was concluded that, the ethanolic bark extract of *Melia azedarach* exhibits antifertility activity in male rats. Further studies may concentrate towards isolation and characterization of active principle responsible for its antifertility activity of *Melia azedarach* bark, which will helpful in the development of new herbal male contraceptive.

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