

ANTI-IMPLANTATION ACTIVITY OF THE LEAF EXTRACT OF *AILANTHUS EXCELSA ROXB.*

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## ABSTRACT

**Objective:** This study was aimed at evaluating *Ailanthus excelsa* Roxb ethanol extract (AEEE) *in vivo* for anti-implantation activities.

**Methods:** The effect of AEEE of the leaves has been studied in three groups of eight week old virgin female albino rats to explore its anti-implantation activity. A selected dose (150 mg/kg and 300 mg/kg) of AEEE were orally administered to a group of the female rats while the vehicle was similarly administered to the third group as control. All administrations started on day one of pregnancy and were given daily for seven days. The rats were sacrificed on day 11 of pregnancy.

**Result:** Presence of foetus, implantation sites and number of corpora lutea in the autopsied rats were recorded and used to calculate the percentage anti-implantation effect.

**Conclusion:** A strong anti-implantation activity was observed at the dose level of 150 mg/kg and 300 mg/kg.

**Keywords:** Anti-implantation activity, Medicinal plants, *Ailanthus excelsa* Roxb.

## INTRODUCTION

Rapid rise of populations has caused serious problems in the economic growth and all round human development in developing countries like India. The population of India is multiplying at alarming rate. The control of human fertility in the sense of its limitation is the most important and urgent of all biosocial and medical problems confronting mankind today [1].

Family planning has been promoted through several methods of contraception, but due to the serious adverse effects produced by

synthetic steroidal contraceptives. So has now been attention focused on indigenous plants for possible contraceptive effect [2].

A number of plant products inhibit male and female fertility and may be developed into contraceptives. Even though, many indigenous plants have been shown to prevent the birth, only few plants have so far been investigated for antifertility activity [3].

There are different type of antifertility activities, such as- Anti-implantation, Abortification, Ecobolic, Uterotonic, Oestrogenic and spermicidal [4].

Table 1: Medicinal plants having Anti-implantation &amp; Abortification activity [6]

S. No.	Local Name	Botanical Name	Family	Plant parts Used
1	Olat kambale	<i>Abroma angusta (L.)L.f.</i>	Sterculiaceae	Roots
2	Aaghada	<i>Achyranthus aspera L.</i>	Amranthaceae	Whole plant, Stem bark
3	Adulsa	<i>Adhatoda vasica Nees.</i>	Acanthaceae	Leaves
4	Papai	<i>Carica papaya L.</i>	Caricaceae	Latex of green fruit Seeds
5	Gajar	<i>Daucus carota L.</i>	Apiaceae	Seeds
6	Deokapashi	<i>Gossipium herbacium L.</i>	Malvaceae	Stem, Roots &Seeds
7	Phalsa	<i>Grewia asiatica L.</i>	Tiliaceae	Seeds
8	Champa	<i>Michelia Champaca L.</i>	Magnoliaceae	Bark
9	Reetha	<i>Sapindus trifoliatus auct.non L.</i>	Sapindaceae	Pulp ,seeds
10	Dhaitee	<i>Woodfordia fruticosa (L) Kurz.</i>	Lythraceae	Flowers

*Ailanthus excelsa* Roxb is a deciduous tree from the Simaroubaceae family and widely distributed in Asia and northern Australia. Its native origin is China and is known as the "tree of heaven" [5].

In Maharashtra, the above plants were used traditionally for, Anti-implantation and Abortification activity (Table 1).

## MATERIALS AND METHODS

## Plant material

The plant of *Ailanthus excelsa* Roxb was collected from Sangli region. The plant was authenticated by Dr. S. S. Sathe, Dept. of Botany PDVP College Tasgaon, Sangli. Specimen vouchers were also kept with number W.E.T.005 for future reference. The leaves of plant were dried in shade. The powder was then packed individually into Soxhlet apparatus and subjected to hot continuous percolation using ethanol (95% v/v) as solvent successively. The extract was concentrated under vacuum.

## Experimental Animals

All experiments were performed on in-bred adult, cyclic virgin female albino rats (weighing 150-200 g body weight). All the rats

were bred in a standard animal house of our college. The rats were housed in polypropylene cages and maintained under environmentally controlled room provided with a 12:12 hrs light and dark cycle for each 24 hrs periods at a temperature of approximately 25 °C. They were fed on a pellets and tap water *ad libitum*.

## Experimental design

## Study on anti- implantation activity

The anti-implantation activity was determined according to the method of Stella O. Olagbende-Dada (2009) [7]. Eighteen mature females colony bred Wistar albino rats were divided into three groups (6 female rats per group). One group was used as a control and the other two groups are used as a test group. Female rat of proestrous phase were kept with males with proven fertility in ratio of 2:1. The female rats were examined in the following morning for evidence of copulation the vaginal smear was examined for thick clumps of spermatozoa. The day on which the spermatozoa were found in the smear was considered the first day of pregnancy (Day 1). A 150 mg/kg of body weight and 300 mg per kg of body weight of

the extract was administrated intragastrically for 10 days from day 1 to day 10 of pregnancy for the test group and same volume of vehicle for the control group. On day 11, all groups of rats were laparotomized under light ether anesthesia to determine the number of implantation sites in the horns of the uteri. The presence of significant difference in the mean number of implantation sites between the extract and the control was taken as a positive response.

#### Statistical analysis

The results were expressed as Mean  $\pm$  SEM. The significance was evaluated by student t-test compared with control and  $p < 0.05$  implied significance.

#### RESULTS AND DISCUSSION

The study of Anti-implantation activity of ethanol extract of leaves of *Ailanthus excelsa* Roxb were shown good activity when administered at the dose of 150 mg/Kg and 300 mg/Kg respectively. The results obtained are shown in table 2.

Both the doses of extract showed significant inhibition of number of implant site. Extract at dose of 300 mg/kg was showed 72.009 % inhibition of implant in uterine horn when compared with vehicle treated group. Both doses showed good activity while the extract at a dose of 300 mg/Kg inhibit 72% of implant in uterine horn as compare to vehicle. Hence this study showed a potent anti-implantation activity on the ethanol extract of leaf of *Ailanthus excelsa* Roxb.

**Table 2: Anti-implantation activity of ethanol extract of *Ailanthus excelsa* Roxb.**

Treatment	Days of admin.	No. of rats without implant on day 10	Number of implantation sites	Percent reduction in implantation site
Vehicle	1 to 10	0	8.33 $\pm$ 0.23*	0
Ethanol extract of 150 mg /Kg	1 to 10	0	5.166 $\pm$ 0.13*	38.078
Ethanol extract of 300 mg /Kg	1 to 10	1	2.33 $\pm$ 0.05*	72.009

\* P < 0.05 was considered as significant

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