



“SCREENING OF ABORTIFACIENT ACTIVITY OF DYEROPHYTUM INDICUM BARK EXTRACT USING FEMALE RATS”

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Abstract:

Introduction : *Dyerophytum indicum* first reported in Oman and is a small plant or herb having height of 1-2m, it is a flowering plant. *Dyerophytum indicum* is straight under shrub with striate branches and stems. Literature survey reports the presence of phytoconstituent Plumbagin, Coumarins, Naphthoquinones and Flavonoid etc.

Material and Method: Dried and powdered bark of the plant *Dyerophytum indicum* O. Ktze. was extracted successively with various solvents viz. Pet. Ether, Ethyl Acetate, Ethanol in Soxhlet extractor . The phytochemical screening revealed the presence of alkaloids, flavonoids, simple phenolics, steroids, tannins and saponins. The potential abortifacient activity of Petroleum Ether, Ethyl Acetate, Ethanol extracts of *Dyerophytum indicum* bark extract performed in female albino rats and oxytocin was used as standard.

Result and Discussion: The abortifacient activity reports that ethanolic extract shows significant result as oxytocin.

Keywords: Abortifacient, *Dyerophytum indicum*, Plumbagin, Pharmacognostical, phytochemical.

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Introduction:

An abortifacient word derived from latin having meaning miscarriage, the word abortus means miscarriage and faciens means making. Abortifacients for animals that have mated undesirably are known as misdating shots. Common abortifacients used in performing medical abortions include mifepristone which is typically used in conjunction with misoprostol in a two-step approach.¹ There are also several herbal mixtures with Abortifacient claims, though there are no available data on the efficacy of these plants in humans. Numerous non- pharmaceutical abortifacients existed during the pre-pharmaceutical era. These included herbal, mineral and ritualistic or spiritual preparations.² The natural herbs which claims as abortifacient are Green Papaya, Bitter Melon, Nutmeg, Cinnamon etc. *Dyerophytum indicum* O. Ktze. belonging to family Plumbaginaceae is a rare and endemic to area of Sangamner taluka. Tribal use this plant in abortion.⁴ Authenticity of the medicinal use is not revealed from any kind of literature.

Materials and Methods:

Plant Material:

Collection of Bark part of *Dyerophytum indicum* is done from Akole District Ahmednagar (Maharashtra). For authentication of *Dyerophytum indicum* A. aspera Herbarium of plant was made and sent to Biological Survey of India, Pune. The plant botanical identification was confirmed by Dr. Priyanka Ingle with no. BSI/WRC/100-1/Tech/2019.

Extraction:

Dried and coarsely powdered Bark part of *Dyerophytum indicum* was subjected to successive solvent extraction in Soxhlet extractor using petroleum ether, Ethyl Acetate and Ethanol as solvent and the marc left was refluxed with water. All the extracts were vacuum dried to produce PEE (6.28%), AQEE (1.88%), ETE (2.94%) respectively.⁷

Animals:

Wistar Rat (female) weighing 150-200 gm, were housed under standard laboratory conditions. The animals were purchased from National Institute of bioscience, Pune and were housed under 12 hrs day and night conditions for acclimatization up to one week. The animals had free access to rat food pellet (purchased from Prashant Enterprises, Pune.) The ethical committee of the institute approved the protocol of the study.

Drugs and Chemicals:

The following drugs and chemicals were used Petroleum ether AR (60-80°C) (PCL, India), ethanol AR (PCL, India), and Oxytocin (PCL, India)

Methods:

PHARMACOLOGICAL STUDIES:

1. Screening of Abortifacient activity

Female rats of wistar strains are used for the study. Rat is sacrifice by decapitation and immediately, the entire uterus was removed from the body. One horn of the uterus was suspended in a muscle bath containing freshly prepared De Jalon's solution (NaCl: 9.0, KCl: 0.42, CaCl₂: 0.06, NaHCO₃: 0.5, and Glucose: 0.5gm/L) and oxygenated with a mixture of 95% of oxygen and 5% of carbon dioxide. Bath temperature is maintained between 37-38°C. Variable concentrations of oxytocin are added to the bath and contractile response of uterus was recorded using a Sherrington's rotating drum on kymograph paper. The bath solution was drained completely and washed two to three times and filled with fresh solution. The response uterine tonic was also recorded using various concentrations ranging from *Dyerophytum indicum* bark extract⁵

2. Determination of abortifacient activity of pregnant female rats

Female rats are caged with males of proven fertility in a ratio of 2:1 in the evening and the following day they are checked for evidence of copulation. This day was considered as day 0 of pregnancy. After ten days, the rats are subjected for testing of pregnancy using HCG strips. The pregnant rats are randomly distributed into 5 groups (A to E) of 6 animals each. On day 15, rats in group A (negative control) were orally administered with distilled water (2 ml), rats in group B (positive control) were administered with misoprostol (100 µg/kg) and those in groups C to E were treated exactly like those in the control groups, but with varying doses of the extract (in mg/kg), respectively. After three days, the animals were anesthetized, dissected and observed for the presence of fetus within the uterus. Absence of fetus in the uterus indicated occurrence of abortion. The number of rats that aborted per group was recorded and the percentage number of rats that aborted per group calculated.⁶

Results:

1. Screening of Abortifacient activity

The response of uterine tonic was recorded of the

various extract of *Dyerophytum indicum* barks and standard oxytocin. The results shows ethanolic extract gave the similar magnitude response as compare to Oxytocin. Ethanolic extract gives significant effect as Oxytocin.

Table No 1 : Observation table for Oxytocin

| Sr. No. | Concentration (µg) | Response (height in cm) |
|---------|--------------------|-------------------------|
| 1. | 10 | 0.7 |
| 2. | 20 | 0.9 |
| 3. | 40 | 1.2 |
| 4. | 80 | 1.2 |

Table .No 2: Observation table for bark extract of *Dyerophytum indicum*

| Sr. No | Conc. (µg) | Response (height in cm) | | |
|--------|------------|-------------------------|--------------------|-----------------|
| | | Ethyl acetate Extract | Pet. Ether Extract | Ethanol Extract |
| 1. | 10 | 0.2 | 0.2 | 0.7 |
| 2. | 20 | 0.2 | 0.4 | 0.8 |
| 3. | 40 | 0.3 | 0.6 | 0.9 |
| 4. | 80 | 0.5 | 0.7 | 1 |

2. - Screening of Abortifacient activity

The abortifacient activity of the plant extract was tasted in pregnant female rats. and absent of fetus in uterus shows abortion. The number of rats that

aborted per group was recorded and the percentage number of **Percentage of rat aborted = number of rat Aborted / number of rats per group X 100.**

Table No 3: Effect of ethanolic extract on pregnant wister rats

| Sr. no. | Parameter | Negative control | Positive Control | Dose of extract | | |
|---------|-----------------------------|------------------|------------------|-----------------|-----------|-----------|
| | | | | 100 mg/kg | 200 mg/kg | 300 mg/kg |
| 1. | Number of rats used | 6 | 6 | 6 | 6 | 6 |
| 2. | Number of rats that aborted | 0 | 6 | 3 | 3 | 4 |
| | Percentage | (0%) | (100 %) | (50%) | (50%) | (66 %) |

DISCUSSION:

The proposal of existing project was generated from the literature review of the plant; which suggested that the various parts of the plant have being used as traditional medicine and alternative system of medicine by medicinal practitioners such as leaves, flowers, fruits, root, bark, stem, seeds, etc. the characters are evaluated for identification of the drug. Extraction of the bark of the *Dyerophytum indicum* has been done using Hot Soxhlet extraction method. petroleum ether, Ethyl Acetate and Ethanol have been used as solvent for extraction. Phytochemical constituents were also observed using various phytochemical identification test. Phytochemicals identified such as alkaloids, glycosides, tannins, carbohydrates, terpenoids, flavonoids, phenolic acids, saponins, etc. The qualitative estimation of the phytochemical was also being observed. Total phenolic, flavonoid, alkaloids and tannin contents were evaluated, The potential abortifacient activity of Petroleum Ether, Ethyl Acetate, Ethanol extracts of *Dyerophytum indicum* bark extract performed in female albino rats and oxytocin was used as standard, the ethanolic extract shows significant results as compare to other extract and oxytocin.

References:

- Arora, R.K. and E.R. Nayar, (1984): Wild relatives of crop plants of India. NBPGR. Science Monograph No. 9, New Delhi.
- Khanna U, Chaudhury RR (1968). Antifertility screening of plants part I Investigation on *Buteamonosperma* Linn. Indian J. Med. Res. 56: 1574-1579.
- John Leland: “Abortion Might Outgrow Its for Roe v. Wade”, The New York Times, October 2, 2005.
- Rod Flower; H.E., 2001. The safety of herbal medicine use during pregnancy. *Frontiers in fetal health*3, 259-266.
- Kulier R, Gulmezoglu AM, Hofmeyr GJ, Cheng LN, Campana A (2004). Kulier R, ed. “Medical methods for first trimester abortion”. *Conchrane Database Syst Rev* (2): CD002855. doi:10.1002/14651858.CD002855.pub3. PMID 15106180.
- Riddle, John M. (1992). *Contraception and Abortion from the Ancient World to the Renaissance*. Cambridge, MA: Harvard University Press ISBN 0-674-16876-3.