

## EFFECT OF CHROMATOGRAPHIC FRACTIONS OF *POLYGONUM HYDROPIPER* LINN. (ROOTS) ON FERTILITY IN FEMALE ALBINO RATS

S. K. GARG AND V. S. MATHUR

*Department of Pharmacology, Postgraduate Institute of Medical Education and Research,  
Chandigarh, India*

(Received 27th October 1971, accepted 18th December 1971)

**Summary.** The alcoholic extract of the roots of *Polygonum hydropiper* Linn. was fractionated by column adsorption chromatography. The various fractions obtained were tested for antifertility activity in female albino rats. Petroleum ether, petroleum ether + benzene (1:1 v/v) and benzene + chloroform (1:1 v/v) fractions prevented pregnancy in 8/10, 6/10 and 6/10 albino rats, respectively, while the first two fractions also caused resorption of implants by the completion of term. The other chromatographic fractions did not exhibit any antifertility activity.

*Polygonum hydropiper* Linn., a plant belonging to Polygonaceae family, has been reported to possess antifertility activity (Chaudhury, 1966). East (1955) reported that the dry powder of the roots impaired the fertility of both male and female guinea-pigs. Chaudhury (1966) mentioned that this plant had been tested at the Stanford University Laboratories, California, and the Council of Scientific and Industrial Research Laboratories, Melbourne and no anti-ovulatory, anti-zygotic, anti-implantation or abortifacient activity had been detected. Vohora, Garg & Chaudhury (1969), however, reported encouraging antifertility activity in the alcoholic extract of this plant. Chromatographic fractionation of the alcoholic extract of the roots of the plant does not ever appear to have been attempted and in the present investigation, such a separation was carried out and each of the fractions was tested for anti-fertility activity in female albino rats.

The air-dried powdered roots (defatted) of *Polygonum hydropiper* Linn. were extracted with 95% alcohol in a Soxhlet apparatus. The extract was evaporated to dryness under reduced pressure. The residue was dissolved in a minimal quantity of ethanol and chromatographed over chromatographic alumina (Brockmann; E. Merck). The amount of alumina used in the column was 20 g of the crude extract to be chromatographed.

The different fractions were collected by eluting the column successively with petroleum ether (60 to 80° C), benzene, chloroform, methanol and their mixtures. The solvents were stripped off from all these fractions. The different fractions so obtained from the alcoholic extract were dissolved in 10% alcohol and tested for antifertility activity in female albino rats according to the method

TABLE 1  
EFFECT OF VARIOUS CHROMATOGRAPHIC FRACTIONS OF THE ALCOHOLIC EXTRACT OF THE ROOTS OF  
*Polygonum hydropiper* LINN. ON IMPLANTATION IN RATS

Fraction no.	Fraction	No. of pregnant rats/ treated rats	No. of implants in individual rats	Mean no. of implanta- tion sites	No. of rats with litters (no. of young)	Remarks
1	Control	10/10	8,6,10,9,9,8, 11,9,7,8	8.5	10(8,6,9,9,8,8,10, 9,7,7)	
2	Petroleum ether	2/10	0,0,0,0,4,0,0, 0,2,0	0.6	0(0,0,0,0,0,0,0,0, 0,0)	
3	Petroleum ether + benzene (1:1 v/v)	4/10	0,0,0,1,9,3,7, 0,0,0	2.0	2(0,0,0,0,7,0,6,0, 0,0)	Two died on Day 11 of pregnancy
4	Benzene	4/5	8,5,6,10,0	5.8	2(5,8,0)	
5	Benzene + chloroform (1:1 v/v)	4/10	0,7,0,8,0,0,9, 0,7,0	3.1	4(0,6,0,7,0,0,8, 0,7,0)	
6	Chloroform	3/5	1,0,0,12,10	4.6	1(0,0,0,4)	One died on Day 18 of pregnancy
7	Chloroform + methanol (95:5 v/v)	4/5	10,9,0,6,5	6.0	4(8,7,0,4,4)	
8	Chloroform + methanol (1:1 v/v)	4/5	10,6,2,0,5	4.6	3(9,6,0,0,4)	
8	Methanol	4/5	8,7,0,10,6	6.2	4(7,7,0,8,5)	

The alcoholic extract was fed orally from Day 1 to 7 of pregnancy at a dose of 100 mg/kg body weight.

described earlier (Khanna & Chaudhury, 1968) which would detect any anti-zygotic, blastocystotoxic, anti-implantation or early abortifacient activity. The only property not detected by this method would be any potential anti-ovulatory activity.

Table 1 shows the results obtained with the different chromatographic fractions. Fractions 1, 2 and 4 inhibited implantation in 8/10, 6/10 and 6/10 rats at a dose of 100 mg/kg body weight, respectively, while Fractions 1 and 2 also caused resorption of implants since two of the two rats (Fraction 1) and two of the four rats (Fraction 2) having implantation sites on Day 10 of pregnancy produced no litters at the completion of term.

None of the young of the experimental rats showed any evidence of teratogenicity up to the age of 1 month.

Further work is in progress to study the effects of different doses of these fractions and their mode of action in rats, rabbits and mice.

#### REFERENCES

- CHAUDHURY, R. R. (1966) Plants with possible antifertility activity. *Indian Council of Medical Research, New Delhi*, Special Report Series No. 55.
- EAST, J. (1955) The effect of certain plant preparations on the fertility of laboratory mammals. *J. Endocr.* **12**, 252.
- KHANNA, U. & CHAUDHURY, R. R. (1968) Antifertility screening of plants. I. Investigation on *Butea monosperma* Lam. Kuntz. *Indian J. med. Res.* **56**, 1574.
- VOHORA, S. B., GARG, S. K. & CHAUDHURY, R. R. (1969) Antifertility screening of plants. Part III. Effect of six indigenous plants on early pregnancy in albino rats. *Indian J. med. Res.* **57**, 893.