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

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(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 separa-
tion 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

<table>
<thead>
<tr>
<th>Fraction no.</th>
<th>Fraction</th>
<th>No. of pregnant rats</th>
<th>No. of implants in individual rats</th>
<th>Mean no. of implantation sites</th>
<th>No. of rats with litters (no. of young)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control</td>
<td>10/10</td>
<td>8,6,10,9,9,8,11,9,7,8</td>
<td>8.5</td>
<td>10(8,6,9,9,8,10,9,7,7,0)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Petroleum ether</td>
<td>2/10</td>
<td>0,0,0,0,4,0,0,0,2,0</td>
<td>0.6</td>
<td>0(0,0,0,0,0,0,0,0,0,0)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Petroleum ether + benzene (1:1 v/v)</td>
<td>4/10</td>
<td>0,0,0,0,1,9,3,7,0,0,0,0</td>
<td>0.2</td>
<td>2(0,0,0,0,7,0,6,0,0,0,0)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Benzene</td>
<td>4/5</td>
<td>8,5,6,10,0</td>
<td>5.8</td>
<td>2(5,8,0)</td>
<td>Two died on Day 11 of pregnancy</td>
</tr>
<tr>
<td>5</td>
<td>Benzene + chloroform (1:1 v/v)</td>
<td>4/10</td>
<td>0,7,0,8,0,0,9,0,7,0</td>
<td>3.1</td>
<td>4(0,6,0,7,0,8,0,7,0)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Chloroform</td>
<td>3/5</td>
<td>1,0,0,12,10</td>
<td>4.6</td>
<td>1(0,0,0,4)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Chloroform + methanol (95:5 v/v)</td>
<td>4/5</td>
<td>10,9,0,6,0,5</td>
<td>6.0</td>
<td>4(8,7,0,4,4)</td>
<td>One died on Day 18 of pregnancy</td>
</tr>
<tr>
<td>8</td>
<td>Methanol</td>
<td>4/5</td>
<td>8,7,0,10,6</td>
<td>6.2</td>
<td>4(7,7,0,8,5)</td>
<td></td>
</tr>
</tbody>
</table>

The alcoholic extract was fed orally from Day 1 to 7 of pregnancy at a dose of 100 mg/kg body weight.
Polygonum hydropiper Linn., and fertility in the rat

described earlier (Khanna & Chaudhury, 1968) which would detect any antizygotic, 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


