SHORT COMMUNICATIONS

FAILURE OF DIHYDROTESTOSTERONE TO ELICIT SEXUAL BEHAVIOUR IN THE FEMALE CAT

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Testosterones have stimulatory effects on peripheral target tissue and sexual behaviour in male and female rats (Beach, 1942), guinea-pigs (Young, 1961; Diamond & Young, 1963), rabbits (Palka & Sawyer, 1966; Beyer & Rivaud, 1973) and cats (Green, Clemente & de Groot, 1957; Young, 1961; Whalen & Hardy, 1970). 5α-Androstan-17β-ol-3-one (dihydrotestosterone, DHT) has stimulatory effects on peripheral target organs, and like testosterones, a negative feedback effect on the pituitary gland and hypothalamus (Feder, 1971).

No behavioural effects were seen in male or female rats when DHT was injected systemically (Beyer, Morali & Cruz, 1971; Feder, 1971) nor in the male rat when it was administered intracerebrally (Johnston & Davidson, 1972). Many experiments support the hypothesis that only androgens that can be aromatized to oestrogens can elicit sexual behaviour and that DHT influences sexual behaviour only when it synergizes with these or with oestrogen (see Davidson & Trupin, 1975 for review). The object of this study was to establish whether DHT had any effect on the sexual behaviour of the female cat.

The DHT was implanted intracerebrally to circumvent any possibility that it lacks an effect on sexual behaviour because of an inability to cross the blood-brain barrier. Thirty-eight ovariecimated cats were implanted bilaterally with cannular systems containing removable inner cannulae. They were tested for their response to DHT, oestradiol-17β, cholesterol and reserpine, eight times within 2 weeks, beginning 48 h after implantation. Oestradiol and cholesterol were used as positive and negative controls; the results with reserpine and the detailed procedure have been published elsewhere (Cerny, 1976). The cannulae were localized in the hypothalamus, within the range 15-7A (mm) on the A-P (anterior-posterior) axis, -1 to -4 mm on the ventral axis and 0-1-5 mm on the lateral axis (Snider & Niemer, 1961). Twelve animals received a smaller dose (the dose was dependent on the area of surface in contact with nervous tissue: Harris & Michael, 1964) of the compounds in 24-gauge cannulae (approximately 0-6 mg, Group I) while 25 animals received a larger dose in 20-gauge cannulae (approximately 1-5 mg, Group II). The order of administration of the compounds was varied and statistical tests indicated that it did not affect the response to the compounds.

The behaviour of the female cat has been well described by Michael (1961). The cats were given 10 min tests with a tom three-four times a week, and their responses to manual stimulation (tapping of perineum and rubbing of flanks) before, and vaginal probing after each test were noted. The results in Table 1 indicate that neither full, nor fragments of sexual behaviour could be elicited from female cats in response to DHT. Regardless of the size of the implant, all animals showed anoestrous behaviour in response to DHT, although 23 mated, nine showed fragmentary behaviour and six remained anoestrous in response to oestradiol. The difference between the two groups in response to oestradiol was not significant. There were no behavioural effects with cholesterol.

Although this study was not designed for aggressive behaviour, it was observed that female cats under the influence of DHT spent more time in walking around investigating the testing room, and rejected the male cat more vigorously than they did under the influence of cholesterol. Further exploration of this problem is necessary, but the results indicate that DHT is not effective in eliciting sexual behaviour in the female cat.
Table 1. Percentage of female cats showing mating or partial sexual behaviour in response to oestradiol and dihydrotestosterone (DHT) administered by intracerebral implants

<table>
<thead>
<tr>
<th>Group</th>
<th>Mating (%)</th>
<th>Lordosis, treading, after-reaction</th>
<th>Lordosis and treading</th>
<th>Anoestrous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I (n = 12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oestradiol (0.6 mg)</td>
<td>33.3</td>
<td>16.6</td>
<td>16.6</td>
<td>33.3</td>
</tr>
<tr>
<td>DHT (0.6 mg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>Group II (n = 25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oestradiol (1.5 mg)</td>
<td>76.0</td>
<td>20.0</td>
<td>0</td>
<td>4.0</td>
</tr>
<tr>
<td>DHT (1.5 mg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

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REFERENCES