Effects on the sexually inactive male rat

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Sexually active male rats develop an easily recognisable behavioural pattern of three actions in the presence of a receptive female, namely mounting, intromission and ejaculation. Sexual activity decreases with advancing age in the male rat: a 24-month-old male is no longer capable of ejaculation.

The research of compounds increasing sexual activity (aphrodisiacs) requires appropriate experimental models as does any other field of pharmacology (e.g. experimental hypertension for the study of antihypertensive agents, or a hypodynamic heart for the study of Digitalis drugs). The work until the author's team succeeded in developing a well-definable, reproducible method for the study of aphrodisiacs took several decades. The principle of the method is that an appropriately long 'deprivation' makes male rats chronically unable to display the complete sexual behavioural pattern (mounting, intromission, ejaculation) even if a receptive female is present: Such males behave either sexually inactively (show no copulatory pattern at all) during the weekly mating check-ups, or become 'mounting-only', or 'sexually lazy' males that are incapable of intromission and/or ejaculation. If an aphrodisiac treatment is really efficient, male rats selected in this way will again display the complete mating behaviour in the presence of a receptive female. This method had allowed the discovery of the aphrodisiac effect of deprenyl, a world-wide known drug (Jumex®, Movegan®, Eldepryl®) employed with success in Parkinson's and Alzheimer's disease.

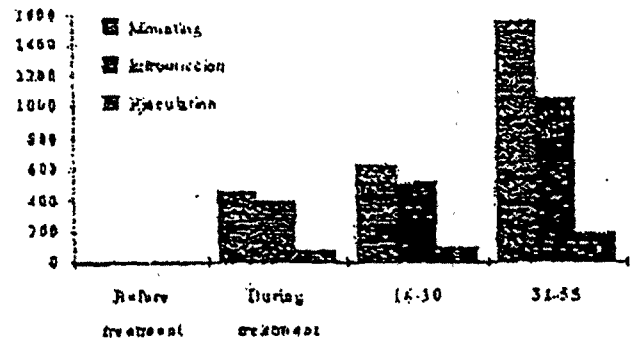

Fig. 9.1.: The effect of HUMET$_{\alpha}$-R on sexual inactivity, I. After a 4-week preliminary period (Before treatment), HUMET$_{\alpha}$-R was given orally to 6 sexually inactive, 12-month-old male rats for 15 weeks (During treatment). The ordinate indicates cumulative values of sexual activity during weeks 16-30 and 31-55 of no treatment. Two animals showed completely revived copulatory pattern during, and a third one after, the withdrawal of treatment. The effect was manifest after a latency of 1-2 weeks and was sustained even after treatment stopped.

The aim of the studies was to check if veterinary observations concerning HUMET$_{\alpha}$-R influence on the copulatory behaviour of domestic animals were reproducible under experimental conditions.

In the first experimental series, the effect of HUMET$_{\odot}$-R administered every other day for 15 weeks was studied in 6 sexually inactive 12-month-old male rats. Sexual activity of the males was monitored once a week for 30 minutes for altogether 55 weeks (Fig. 9.1).
In another experimental series (Fig. 9.2), the effect of the preparation given in doses of 0.24 ml/animal (Fig. 9.3) was studied in contrast to 5% glucose (used as a solvent for HUMET$_{\odot}$-R) in groups of 10 sexually inactive young male rats each.

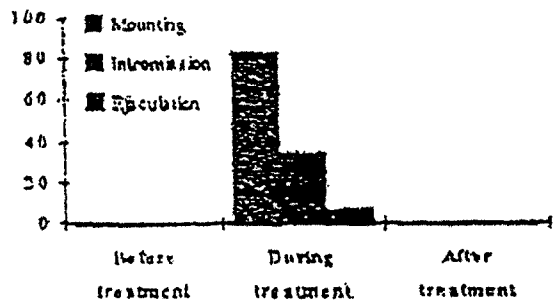

Fig. 9.2: The effect of the control agent on sexual inactivity. After a 4-week preliminary period (Before treatment), ten sexually inactive, young male rats were given 5% glucose (used as a solvent for HUMET$_{\odot}$-R) orally for 15 weeks (During treatment). Cumulative sexual activity (ordinate) was monitored for 15 further weeks (After treatment). Two animals showed revived sexual activity. The effect of the glucose solution was manifest after 1-2 weeks of latency and ceased after the withdrawal of treatment.

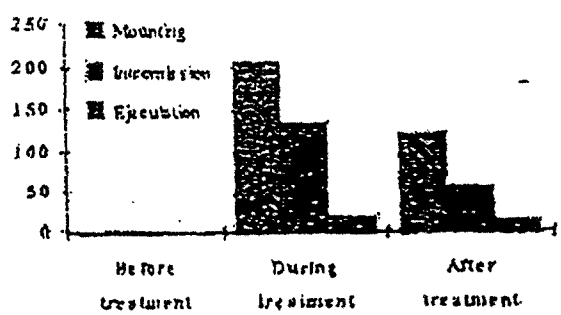

Fig.9.3: The effect of HUMET$_{\odot}$-R on sexual inactivity, II.
After a 4-week preliminary period (Before treatment) HUMET$_{\odot}$-R was given orally to 10 sexually inactive young male rats for 15 weeks (During treatment). The ordinate indicates cumulative values of sexual activity during further 15 weeks (After treatment). Three animals showed revived sexual activity. The effect was manifest after 1-2 weeks of latency and maintained even after treatment stopped.

Table 9.1: Changes in body mass and lifetime under HUMET$_{\odot}$-R treatment.

Rat #	Body mass (g) when treatment began	Body mass (g) when treatment ended	Lifetime (weeks)
1	400	430	172
2	370	290	136
3	400	410	171

Naturally, none of us is getting any younger. Nor is the male rat. There is a close relationship between the age of the male rat and its sexual activity, as mentioned before.

In a third experimental series, three sexually inactive male rats of very old age (30 months) were tested three times a week until the day of their death. HUMET$_{\Phi}$-R administered orally in a 0.25 ml dose every other day obviously affected their sexual behaviour. Rat #1 responded in a dramatic way to the treatment, as early as three weeks after the start of the study: it showed a weekly mean of 2 to 7 ejaculations. During the 30 weeks of the treatment altogether 707 mountings, 339 intromissions and 50 ejaculations were observed. This high-intensity sexual activity continued without any further treatment during the next 10 weeks (530 mountings, 228 intromissions and 42 ejaculations). In an unusual way, this male showed a partner (female) seeking behaviour even at the age of 40 months: moving freely over a broad area it looked for the female, and finding her showed multiple ejaculations each time. It lived for 172 weeks (Table 9.1), a sharp contrast to the mean life expectancy of 147 weeks of the untreated male rat.

This experiment calls attention therefore also to the fact that *HUMET$_{\Phi}$-R treatment increases life expectancy and improves life quality as well*, as apparent from the study on sexual activity.