Cannabis sativa induces "winning" behaviour in previously "loser" rats

It has been reported recently (Masur, Märtz & others, 1971) that the administration of 2·5 mg/kg of (—)-Δ^9-*trans*-tetrahydrocannabinol increases the probability of "winning" behaviour in rats submitted for the first time to a food competition situation in a straight runway. However, it can be questioned whether this effect would also manifest itself in a social hierarchy established before drug administration. The results of an experiment to clarify this point are now reported. Twelve 3 month old female Wistar rats, about 200 g, had food withheld for 22 h and were trained individually every 48 h to traverse a straight runway to be rewarded with food; after 12 trials all animals reached the reward in less than 10 s. They were then paired and submitted to the contest situation, in which both rats of each pair were simultaneously introduced into the opposite sides of the apparatus. As the rats met in the middle of the runway, one pushed the other and gained the reward. Two sessions were performed, at intercalated days, each one consisting of 4 contests and 3 individual trials to assure the maintenance of the behaviour for the loser rats. The animals which lost 5 or more of the 8 contest trials in the sessions, were classified as losers. Two more sessions at 48 h intervals followed, in which loser rats received, 45 min before, 10 mg/kg (i.p.) of an extract of cannabis prepared according to Carlini & Kramer (1965); their partners received a control solution (saline + Tween 80). The extract was previously assayed in rabbits and abolished the corneal reflex at the dose of 0·170 $\pm$ 0·64 mg/kg. Finally, two last sessions were performed without drug administration. In the 2 sessions before the drug phase, the 6 loser animals had a low frequency of winning behaviour; they only won 9 and 3 times from a total of 24 contests for each session respectively. However, in the 2 sessions in which 10 mg/kg of cannibis extract were given there was a change in the hierarchy, with these animals now winning 17 and 19 times, respectively, therefore becoming winners. The total number of wins scored in the 2 pre-drug sessions differed significantly from that obtained in the 2 drug sessions (Wilcoxon Signed Rank test; $P \leqslant 0{\cdot}05$). Stopping drug administration caused the rats to return to their previous loser behaviour (6 and 7 times winners). In conclusion, the present data show that even when rats had a previously established social hierarchy, *Cannabis sativa* was able to modify it temporarily.

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