

# Increased and decreased eating following THC administration\*

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Rats deprived of both food and water for 1 day were administered  $\Delta^9$ -THC 15 min prior to presentation of food and water. Food and water intake were then measured 2 h later. A dose of 1.0 mg/kg of THC increased food intake, whereas a dose of 2.0 mg/kg decreased food intake. Water intake decreased with increasing dose.

The results of animal studies with  $\Delta^9$ -THC have indicated that THC depresses food intake (e.g., Manning, McDonough, Elsmore, Saller, & Sodetz, 1971). Observations on humans generally show that THC increases food intake or has no effect in either direction (Hollister, 1971). The toxicity associated with the higher doses of THC usually employed in animal studies has recently been emphasized (Elsmore & Fletcher, 1971). The aim of the present experiment was to determine if increases and decreases in food intake were indeed a result of, respectively, low and high doses of THC.

## METHODS

The Ss were 20 naive female Sprague-Dawley rats weighing 210-240 g. They were housed

individually in standard Wahmann rodent cages.

The rats were allowed to eat powdered food from jars designed to eliminate problems of spillage (Joy, Emma, & Mayer, 1971) ad lib for at least a week. Graduated drinking tubes were used to administer water. After the ad lib acclimatization period was over, the rats were allowed no access to either food or water for 24 h. Following the deprivation period, the rats were weighed and injected IP with either a dose (0.5-2.0 mg/kg) of THC in a Tween-80 vehicle or the vehicle alone. The volume injected in all cases approximated 0.1 ml. Each rat was injected only once; four to six rats were used for each dosage level. Fifteen minutes after injections, premeasured amounts of food and

water were made available to all rats. The rats' weights and amounts of food and water consumed were all measured 2 h later. Weight and water were measured to the nearest gram and milliliter, respectively, and food to the nearest 1/10 g.

## RESULTS

Table 1 shows that a dose of 1.0 mg/kg of THC significantly increased food intake, whereas a dose of 2.0 mg/kg of THC significantly decreased food intake. Only a decrease in water intake was significant at the 2.0-mg/kg dosage. Similarly, weight gain was significantly depressed only by the highest dose.

## DISCUSSION

These results indicate at least one source of confusion concerning the effects of THC on food intake: the dose-response curve is an inverted-U function. In contrast, THC produced a monotonic depression of water intake, although an increase in water intake with a dose less than 0.5 mg/kg cannot be ruled out. Further animal studies should be directed towards analyzing the effects of low doses ( $\leq 1$  mg/kg) of THC, since the latter are probably more comparable to doses self-administered by humans.

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## REFERENCES

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Table 1  
Mean Food and Water Consumed and Weight Gain

Dose (mg/kg) of THC	Food (g)	Water (ml)	Weight Gain (g)
0 (Tween)	4.83	8.5	9.3
0.5	5.15	7.8	9.0
1.0	6.67*	7.3	9.3
2.0	3.05*	2.0†	2.8†

\*†Significant difference from Tween at  $p < .05$  and  $.01$ , respectively ( $t$  tests).