

### **Self-administered nicotine solutions preferred to placebo by the rat**

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Nicotine solutions were self-administered by male, hooded Lister rats (180-250 g) either by drinking water or through permanently implanted catheters.

Rats were trained to obtain their total water requirement in the home cage by pressing levers. Two wells provided water, and the rats, kept either singly or in groups of four, usually drank more from one well than from the other. Nicotine solution (nicotine acid tartrate, 50  $\mu\text{g}/\text{ml}$ .) then replaced water in one of the wells. Use of that well increased in each of the grouped rats (four groups) and in three of five of the rats kept singly. This was also true if nicotine replaced water in the least preferred well.

Polyethylene catheters implanted in the external jugular veins of thirty-two naïve rats were permanently connected to an automatic injection apparatus. A programmed sequence of nicotine injections was given for at least a week to the rats in their home cages. After this time the programme was switched off and rats had to learn to press a lever to obtain nicotine. Twelve rats survived with patent catheters and all of these learned to press the lever. The rate of lever-pressing increased by more than one-fifth in six rats when the dose of nicotine received for each press was reduced from 10 to 5  $\mu\text{g}/\text{kg}$ . In a separate experiment in which rats could obtain the saline vehicle by lever pressing, no rat opted to obtain this reward.

Twelve rats were trained to press a lever for water rewards in daily 1 hr trials in special cages. Once response rates had become steady polyethylene catheters were implanted as before. In subsequent trials, a lever-press also injected saline simultaneously with the water reward. The water reward was now removed.

Half of the rats still received a saline injection and the other half now received a nicotine injection (1  $\mu\text{g}$  per press). Saline rats extinguished rapidly. The number of lever presses of the nicotine rats fell at first and then rapidly increased back towards the original pressing rate. The consumption of nicotine was about 50  $\mu\text{g}$  in each trial. These rats preferred nicotine solutions to a placebo of either water, in one test, or saline in the other.

Man uses tobacco in diverse ways; these experiments support suggestions that nicotine may be responsible for some of its appeal.

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### **The effect of progesterone and some other agents on the failure of pregnancy produced by feeding agroclavine, an ergot alkaloid, in the rat**

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Failure of pregnancy occurs in mice after oral administration of agroclavine during the first five days after mating (Mantle, 1969) and this observation has been extended to rats (Edwardson, 1968). In an attempt to elucidate the mechanisms involved in this failure, prolactin, progesterone and other agents have been administered by injection during the period of treatment with agroclavine.