The principal effect of nicotine was to reduce aggression. A linear regression equation showed that in both the albino and hooded strains the experimental rats showed less aggression than the control rats in the baseline observations, less still when they were given nicotine, but more when nicotine was given to the control rats instead.

The total activity of the rats was not consistently affected by nicotine, despite a slight reduction in other behaviour (investigation, sexual and submission) also involving approach to the other rat. There was a very slight, and probably independent, increase in escape. There was evidence that the behavioural changes were not secondary to side-effects.

Since the effect on aggression was fairly specific, and since the overall effect was both reversible and of the same order of magnitude as the difference between individuals, it seems that (in the words of Armitage *et al.*, 1968) nicotine is likely to " bring about a normal physiological response which can occur without intervention of a drug ".

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The effects of drugs on the hyper-reactivity of rats with bilateral anterior hypothalamic lesions

S. BLYTHER and A. S. MARRIOTT*, *Department of Pharmacology, Allen & Hanburys Ltd., Ware, Hertfordshire*

The limbic system is known to be concerned with the mediation of emotional responses (Maclean, 1949; Pribram & Kruger, 1954; Grossman, 1967). Although the functional inter-relationships of the various limbic components and higher brain centres are not fully understood it is evident that emotional reactions are at least partially integrated and controlled at hypothalamic level. Kessler (1941) and Wheatley (1944) found that small bilateral lesions in or near the ventromedial nucleus of the hypothalamus in the cat produced a permanent increase in emotional reactivity. Similar results have been reported in the rat (Anand & Brobeck, 1951). In the work reported here small bilateral electrolytic lesions were placed stereotaxically in the anterior hypothalamus close to the anterior portions of the ventromedial nuclei. Rats with such lesions were found to be extremely vicious and to react in an exaggerated but fully co-ordinated and well directed manner to a variety of tactile stimuli. This hyper-reactivity persisted until animals were killed 6 months after lesion placement.

The effects of chlordiazepoxide, chlorpromazine, amylobarbitone, methaqualone and pethidine on the hyper-reactivity of these rats were assessed using a behavioural rating scale. All drugs were administered intraperitoneally. It was found that chlordiazepoxide and chlorpromazine reduced the hyper-reactivity in a dose-dependent manner; ED 50 values for these drugs were 9 and 4·7 mg/kg respectively.

In contrast amylobarbitone and methaqualone only reduced the hyper-reactivity at hypnotic or near-hypnotic dose-levels (20–40 mg/kg). The hyper-reactivity was unaffected by pethidine (10 mg/kg). This result largely eliminated the possibility that the behavioural effects of the lesions were due to chronic pain.

The results of this investigation indicate that animals with anterior hypothalamic lesions could be of value in evaluating the "tranquillizing" as distinct from the hypnotic properties of drugs.

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Interactions of oestrogenic and progestational steroids with dexamphetamine and fencamfamin in mice

A. BLACKHAM* and P. S. J. SPENCER, *Department of Pharmacy, University of Aston, Birmingham*, 4

Increased progestational activity in both man and experimental animals is associated with increased tissue monoamine oxidase (MAO) activity (Cohen, Bitensky, Chayen, Cunningham & Russell, 1964; Southgate, Grant, Pollard, Pryse-Davies & Sandler, 1967; Kuwabara, Russfield, Weisz & Lloyd, 1967). The occurrence of depression in susceptible women receiving these agents may be due to this enhanced MAO activity (Grant & Pryse-Davies, 1968). Enhanced MAO activity might also change the properties of other drugs administered concomitantly with these steroids. The responses of mice to dexamphetamine and fencamfamin were observed after pretreatment with progestational or oestrogenic steroids.

Female TO mice were injected daily for 6 days, subcutaneously, with a progestin (lynestrenol, 10 mg/kg) or an oestrogen (mestranol, 1 mg/kg). On the seventh day, the effects of dexamphetamine and fencamfamin given intraperitoneally were assessed on body temperature, locomotor activity; their acute toxicity was also determined.

Mestranol increased while lynestrenol reduced the hyperthermia induced by dexamphetamine (10 mg/kg) in mice. Fencamfamin (20 mg/kg) failed to induce hyperthermia in control and lynestrenol-pretreated mice, but did induce hyperthermia after mestranol pretreatment. The potentiating effects of mestranol could be mimicked by pretreatment with the MAO inhibitor, nialamide, but not by the inhibitor of microsomal enzyme activity, SKF 525A.

The increased locomotor activity induced by dexamphetamine (5 mg/kg) and fencamfamin (10 mg/kg) was enhanced by mestranol, and reduced by lynestrenol.