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### Diethyldithiocarbamate and amphetamine stereotype behaviour

SIR,—Pfeifer, Galambos & György (1966) described the sedative effects of diethyldithiocarbamate (DDC) including antagonism of amphetamine-induced hypermotility. The authors assumed this antagonism to be due to the effect of DDC in decreasing brain noradrenaline by inhibiting the synthesis of noradrenaline from dopamine.

We found the effect of DDC on the stereotype behaviour (constant sniffing, licking or biting) exhibited by rats (16) and mice (20) made hyperactive by amphetamine (3 and 6 mg/kg base s.c. respectively) was not antagonised by DDC 500 mg/kg s.c. or even after repeated doses (2 or 3 × 500 mg/kg) given from 7 hr to  $\frac{1}{2}$  hr previous to the amphetamine. Also, two groups of six mice given amphetamine (6 mg/kg) and either DDC or a placebo 7, 4 and 1 hr previously, showed a similar onset of stereotype activity (68 min  $\pm$  29 s.d.) but the activity terminated at 289 min  $\pm$  52 (s.d.) for DDC and at 151 min  $\pm$  9 (s.d.) for the placebo. All the animals treated with DDC were strongly sedated and the reduction in amphetamine hypermotility (locomotion) reported by Pfeifer & others (1966) was obvious. Thus the effect of DDC is in sharp contrast to compounds which decrease the synthesis of both dopamine and noradrenaline by inhibition of the tyrosinehydroxylase ( $\alpha$ -methyltyrosine and some of its derivatives). These compounds in relatively low doses change the amphetamine-induced stereotype hyperactivity into a more varied behaviour, which besides sniffing includes locomotion and grooming. This effect of  $\alpha$ -methyltyrosine is reversed by dopa (Randrup & Munkvad, 1966; Weissmann, Koe & Tenen, 1966). The reversing effect of dopa is not inhibited by DDC (4 rats, two with 500, two with 2 × 500 mg/kg s.c. DDC given before amphetamine + dopa). The evidence thus indicates that dopamine rather than noradrenaline is associated with the stereotype behaviour, while the motility may be more related to noradrenaline.

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