Some central nervous properties of diethyldithiocarbamate

SIR,—Diethyldithiocarbamate has been shown to inhibit dopamine β-oxidase in the ileum of rats and rabbits, so that 200–500 mg/kg of the compound decreases the noradrenaline content and increases the dopamine level (Collins, 1961). Carlsson, Lindquist, Fuxe & Hökfelt (1966) confirmed the noradrenaline-decreasing effect in rat ileum, heart and brain and demonstrated an increase of dopamine level in the brain stem and in the hemispheres; but no difference was found in the striatum or in the whole brain. We find that diethyldithiocarbamate has certain depressing effects on the central nervous system.

After the intravenous administration of 50 mg/kg of hexobarbitone the sleeping time in control mice was 429 sec ±129 (s.d.) When the animals were given diethyldithiocarbamate, 400 mg/kg, 2 hr before the experiment the sleeping time increased to 2478 sec ±746 (s.d.). The compound had no effect on tremorine-induced tremor in mice and it was also ineffective towards amphetamine toxicity in aggregated mice.

TABLE 1. THE EFFECT OF DIETHYLDITHIOCARBAMATE (400 mg/kg s.c.) ON THE HYPERMOTILITY PRODUCED BY AMPHETAMINE (5 mg/kg s.c.) AND COCAINE (20 mg/kg s.c.)

Treatment	No. of animals	Motimeter counts (means ± s.d.)	
		without diethyldithiocarbamate	with diethyldithiocarbamate
Amphetamine	4	1436 ± 713	261 ± 318
Cocaine	4	967 ± 626	534 ± 204
Amphetamine + nialamide ..	3	1030 ± 485	1698 ± 962

The recording was made 2 hr after the administration of diethyldithiocarbamate and 1 hr after amphetamine or cocaine. Nialamide was administered 20 hr before the experiment.

In rats, diethyldithiocarbamate diminished the hypermotility caused by amphetamine or cocaine. The motility was measured with the motimeter Knoll (1960). The inhibiting effect of the compound in hypermotility may be related to its effect in decreasing noradrenaline in the brain, since in the presence of the monoamine oxidase inhibitor, nialamide, the inhibiting effect is not seen (Table 1).

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References

Carlsson, A., Lindquist, K., Fuxe, K. & Hökfelt, T. (1966) *J. Pharm. Pharmac.*, **18**, 60–62.

Collins, G. G. S. (1965). *Ibid.*, **17**, 526–527.

Knoll, J. (1960). *MTA. V. Oszt. Közl.*, **11**, 313–320. (1961. *Archs int. Pharmacodyn. Thér.*, **130**, 141–154).