cholinesterase (Ambache, Freeman & Hobbiger, 1969). The reversible inhibitors are efficient acetylcholinesterase inhibitors (Augustinsson, 1948) and therefore potentiate. The organophosphorus inhibitors are less efficient acetylcholinesterase inhibitors (Aldridge, 1953) and therefore do not potentiate.

These results would support the contention that the organophosphorus inhibitors are of little value in experiments designed to collect and assay acetylcholine released from isolated tissues. A further possibility, that they may also suppress acetylcholine release, has yet to be explored.

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Do "loser" rats become "winners"?

It was reported by Masur, Karmiol & Neto (1972) that *Cannabis sativa* induces winning behaviour in previous loser rats. We have some evidence which make us doubt the justification of these terms.

In our experiment—done according to the description of Grossmann & Grossman (1970) rats were trained to go through a tunnel to obtain food. Some animals were trained from right to left, others on the reverse direction. Once in each session of 10 trials, two animals were brought into the tunnel at opposite ends at the same time and the one that pushed the other animal backwards out of the tunnel more than three successive times, we named "winner" rat.

The antianxiety drug diazepam, made "loser" rats, "winners" (Table 1). However, close observation showed that the lack of defensive postures and the perseverant "stubborn" behaviour of these rats was the reason that the former "winner" rats finally gave up and withdrew.

We concluded that we were observing the effect of drug-induced loss of social responsiveness in a situation where the limited space reduced the possibilities of provoked fighting. Maybe the interference with the normal ecological patterns of submission in drugged animals would explain this surprising result as well as such apparent contradictory observations as the taming effect on the one hand and the increased fighting on the other hand, induced by anxiolytic drugs and by cannabis derivatives (Ten Ham, 1972; Carlini & Masur, 1969; Guaitani, Marcucci & Garrattini, 1971).

Under these circumstances the terms "loser" and "winner" are perhaps inappropriate. To substantiate our conclusion, we repeated the experiment with a limited number of rats, who after four days experience of encountering a live rat, were faced with a small plug of cotton wool in the tube. Though this plug could be pushed away with a minimum pressure, rats who forced live rats to withdraw did so themselves from

Table 1. *Effects of diazepam on "winning" behaviour of rats in the Grossmann tunnel test of dominance.* The animals encountered once in 10 trials the same opposing animals for five days. Treatment was the fifth day subcutaneously 30 min before testing.

Diazepam dose mg/kg, s.c.	Administered to	No of diazepam treated rats winning	No of reversals of 8 pairs
Placebo	Winner rats	—	0
2	Winner rats	7/8	1
6	Winner rats	8/8	0
Placebo	Loser rats	—	0
2	Loser rats	2/8	2
6	Loser rats	4/8	4
Placebo	Both rats	—	0
2	Both rats	—	2
6	Both rats	—	2

the cotton substitute. This probably means that the method has only a limited value for determining dominance reversal in drugged animals. It cannot be used to demonstrate the taming effect—as "winners" are not made "losers"—of anxiolytic compounds and is probably no measure of aggression for drugged animals.

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August 4, 1972

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A comparison of Mg pemoline and (+)-amphetamine effects upon avoidance behaviour and the amine pump

Reserpine depresses conditioned avoidance behaviour in rats for up to 72 h. However, this depression can be partially reversed by treatment of the reserpinized rats with (+)-amphetamine (Rech, 1964). We have found that conditioned avoidance behaviour is also depressed by Ro 4-1284*, a short-acting reserpine analogue. Moreover, this depression is prevented by pretreatment of the animals with either (+)-amphetamine or Mg pemoline. While the two stimulants can both prevent Ro 4-1284 depression, they are dissimilar in their effects upon the amine pump, suggesting that they may antagonize Ro 4-1284 by different mechanisms.

Male Swiss-strain mice were trained to a 95% level of shock avoidance. Groups of animals ($n \geqslant 8$) were then dosed intraperitoneally with saline, methylcellulose (vehicle for Mg pemoline), (+)-amphetamine (0·5, 1·0, 2·0 mg/kg), or Mg pemoline (25, 50, 100 mg/kg). Thirty min after drug, a five trial testing session was given. Neither (+)-amphetamine nor Mg pemoline altered avoidance behaviour at this time. Immediately after the testing session, an intraperitoneal dose of Ro 4-1284 (2 mg/kg) was given to all the mice. These groups were then tested with five trial avoidance sessions at 30, 60, and 90 min after Ro 4-1284.

* (2-Hydroxy-2-ethyl-3-isobutyl-9,10-dimethoxy-1,2,3,4,6,7-hexahydrobenzo(a)-quinolizine).