brain stem. The concentration of dopamine was unaffected in any of the regions, but γ-aminobutyric acid levels were reduced throughout the brain. Both the peptides slightly increased the depletion of brain noradrenaline and dopamine caused by α-methyl tyrosine, but decreased the reduction in the 5-hydroxytryptamine concentrations caused by p-chlorophenylalanine.

They may act by slightly increasing the release of noradrenaline, but decreasing that of 5-hydroxytryptamine possibly by reducing the synthesis of this amine. However, as these peptides have different effects on the conditioned avoidance behaviour, but qualitatively similar effects on brain amine metabolism, it seems unlikely that these biochemical effects can explain the behavioural changes.

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The role of catecholamines in the reversal of reserpine-induced hypothermia in mice by desipramine and chlorpromazine

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Whittle (1967) has suggested that the reversal of reserpine-induced hypothermia in mice by desipramine and chlorpromazine is mediated by catecholamines. The present study was designed to test this hypothesis.

Groups of 6 male, albino mice (body weight, 18–20 g) were injected subcutaneously with reserpine 2 mg/kg, and maintained at an environmental temperature of 20 ± 1°C. Seventeen h later, the test drug or control vehicle was administered. Oesophageal temperatures were measured every hour using an orally-inserted probe.

Subcutaneous injection of L-dopa (125–500 mg/kg) produced a dose-dependent increase in the body temperature of reserpinized mice, confirming the results of Barnett & Taber (1968) and reversed some of the other symptoms of reserpinization.

Intraventricular and subcutaneous injection of catecholamines induced a hyperthermic effect in reserpinized mice. In addition, intraventricularly injected dopamine

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and noradrenaline both elicited transient, but very profound, tremor and reversal of ptosis in reserpinized mice.

Pretreatment of reserpinized mice with phentolamine (30 mg/kg) or phenoxybenzamine (30 mg/kg) partially blocked the thermogenic actions of orally administered desipramine, subcutaneously injected noradrenaline and adrenaline, and intraventricularly injected noradrenaline. Chlorpromazine-induced thermogenesis was unaffected by phentolamine or phenoxybenzamine.

Pretreatment of reserpinized mice with (±)-propranolol (30 mg/kg) completely abolished the thermogenic effects of orally administered desipramine and chlorpromazine, and subcutaneously injected noradrenaline and adrenaline. Thermogenesis induced by intraventricular injection of noradrenaline was blocked by low doses of (±)-propranolol but unaffected by high doses. (+)-Propranolol (30 mg/kg) partially blocked the thermogenic effects of chlorpromazine and adrenaline.

Orally administered desipramine (3 mg/kg) and chlorpromazine (30 mg/kg) were unable to elicit their usual thermogenic effects in reserpinized mice when the animals were pretreated with α-methyl-*p*-tyrosine (80 mg/kg I.P., 24, 18 and 4 h before the thermogenic drug), an inhibitor of tyrosine hydroxylase. The thermogenic responses to subcutaneous injections of noradrenaline (0·5 mg/kg) and adrenaline (0·5 mg/kg) were unaffected by α-methyl-*p*-tyrosine, and the thermogenic responses to L-dopa (500 mg/kg S.C.) and intraventricularly injected noradrenaline (0·5 mg/kg) were potentiated.

Pretreatment of reserpinized mice with diethyldithiocarbamate (400 mg/kg I.P.), an inhibitor of dopamine-β-hydroxylase, reduced the thermogenic effects of desipramine (3 mg/kg orally), chlorpromazine (30 mg/kg orally) and L-dopa (500 mg/kg S.C.). Diethyldithiocarbamate did not modify the thermogenic effects of subcutaneously injected noradrenaline (0·5 mg/kg) and adrenaline (0·5 mg/kg), and potentiated the thermogenesis induced by intraventricularly injected noradrenaline (0·5 mg/kg).

These results are consistent with the hypothesis that catecholamines are involved in the reversal of reserpine-induced hypothermia in mice by desipramine and chlorpromazine.

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Effects of acutely administered analgesic drugs on rat brain 5-hydroxytryptamine turnover

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There is evidence to implicate brain 5-hydroxytryptamine (5-HT) systems in the mode of action of morphine (Tenen, 1968; Samanin, Gumulka & Valzelli, 1970). Relevant to such a concept, an increase in rat brain 5-HT synthesis following