Mercuric chloride (1.5 mg/kg, i.p.) was given 7 days after the administration of a renotoxic dose of one of the four compounds. The urinary excretion of alkaline phosphatase, glutamic oxalacetic transaminase and lactic dehydrogenase and renal histology were used to evaluate the damage. The results of these experiments suggested that the regenerating kidneys, irrespective whether the pretreatment was with a thionein inducer or other renotoxic agents, mitigated the nephrotoxicity of $HgCl_2$.

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Tributyl S,S,S-phosphotrithiolate (DEF), a potential tool in thermoregulation research

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A number of organophosphorous compounds depress core temperature transiently in rats, although not mice (Meeter & Wolthius, 1968), but the effect is complicated by excitatory effects. DEF (tributyl S,S,S-phosphotrithiolate) is an organophosphorous defoliant used in the preparation of cotton for harvesting, and in rats and mice it can be used to produce a pronounced and prolonged fall in core temperature at ambient temperatures below 30°C. Thus at 20°C the rectal temperature of ten female rats (250 g) given DEF 200 mg (637 μM)/kg, fell from 37.7 ± 0.14°C (mean ± s.e.) before i.p. injection to 32.9 ± 0.6°C at 2.5 h and 27.8 ± 0.9°C at 24 hours. Rectal temperature recovered slowly over the next 2 to 3 days. Mice showed more rapid falls to 23–25°C at 5–6 hours. The falls in temperature were dose-related over the range 20–200 mg/kg, the latter producing the maximal effect and being the approximate threshold for acute cholinergic organophosphorous symptoms.

Following DEF injection, exposure to 35°C ambient did not increase rectal temperature above that of solvent injected rats, all showing skin vasodilation and hypoactivity. At 30–32°C DEF produced few external symptoms other than a reduction in spontaneous movement. Reaction to external stimuli was normal, and the EEG activated readily from a state suggesting mild sedation. The tail vascular responses (as indicated by surface temperature) to heating and cooling of the body were normal, and restrained rats provided with additional heat in this way were able to maintain normal body temperatures by regulating tail blood flow.

Oxygen consumption measured by the method of Stock (1975) showed DEF to produce little reduction in Vo_2 at 30°C ambient (from 1.35 ± 0.18 to 1.18 ± 0.05 l kg^{-1} h^{-1}), but a large reduction at 15°C ambient (from 2.46 ± 0.06 to 1.01 ± 0.11 l kg^{-1} h^{-1}), effectively blocking the response to lowered environmental temperature. Oxygen consumption was measured in groups of 5 rats during the last 90 min of exposure to 15 or 30°C 4.05 h after injecting DEF (200 mg/kg), and mean rectal temperatures were 36.1 ± 0.3°C at 30°C and 27.8 ± 0.7°C at 15°C.

DEF pretreatment did not reduce the response to noradrenaline (1.5 mg/kg) given i.p. at 30°C 6 h later, the increases in oxygen consumption for 5 DEF and 5 solvent treated rats being 1.35 ± 0.18 and 1.13 ± 0.09 litre/kg above baseline respectively.

The ability of DEF treated animals to regulate core temperature at elevated ambient temperatures, the persistance of vascular tone and thermal reflexes, the normal thermogenic response to noradrenaline, and the lack of such a response to cold stress, suggests a blocking action at the CNS or adrenal level, and we are currently investigating these possibilities.

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