



Effect of cypermethrin on memory, movement activity and co-ordination in mice after transient incomplete cerebral ischemia

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Abstract:

Cypermethrin is a synthetic pyrethroid widely used as an insecticide. The aim of the present study was to investigate the possible effect of 0.1 LD₅₀ of cypermethrin on memory, movement activity and co-ordination in mice exposed to transient incomplete cerebral ischemia. Transient occlusion of both carotid arteries (BCCA) in adult female mice was performed under ketamine + xylazine anesthesia. Intraperitoneal LD₅₀ for cypermethrin was calculated to be 169.9 mg/kg. Memory retention was evaluated in a step-through passive avoidance task (PA), working spatial memory in a Y-maze, spontaneous movement activity in an automated device fitted with two photocells and a counter in two subsequent 30-min periods, and movement co-ordination on a rod spinning at the rate of 10 rotations/min. Neither memory nor movement co-ordination were significantly affected by transient incomplete cerebral ischemia or cypermethrin. BCCA itself did not impair movement activity in the examined mice. Cypermethrin decreased exploratory motor activity in the mice, and the effect was exacerbated by BCCA. These results show that transient incomplete cerebral ischemia combined with exposure to subtoxic doses of cypermethrin do not impair memory, but do affect behavior, producing transient reduction of spontaneous horizontal movement in mice.

Key words:

cypermethrin, transient cerebral ischemia, memory, movement activity, movement co-ordination
