Malathion induces anxiety in the male adult mouse

Goudarz Sadeghi Hashjin, Farhad Sadeghi Dizaj, Hadi Attaran, Mohammad Kazem Koohi

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Introduction: The cholinergic nervous system and acetylcholine esterase are involved in chronic intoxication with organophosphorous insecticides. The present study aims to investigate the influence of the chronic toxicity of these chemicals on behaviors related to anxiety, using the elevated plus maze (EPM), in the male adult mouse.

Material and methods: Either water or 1% concentration of malathion was applied dermally to the male adult mice (10 s, once daily for 28 days) and, on day 29, the EPM test was done.

Results: Time spent in the open arms (TSOA) in intoxicated animals was decreased by over 50% compared to the controls (p = 0.047). In contrast, time spent in closed arms was significantly higher in the malathion-exposed mice (p = 0.025). Percentage of open arm entries (OAE) was slightly smaller in the malathion-treated group in comparison to the control animals. Percentage of closed arm entries (CAE) in the treated group was slightly higher than the value in the control animals.

Conclusions: The results showed that chronic toxicity of malathion may lead to an anxiety-like behavior in the animal model used in this study. It is difficult to extend these findings to clinical situations. However, more experimental work in different animal species as well as epidemiological studies in human subjects in this regard are highly recommended.

keywords: anxiety, elevated plus maze, malathion, mouse, organophosphates