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Dopamine receptors and transporters sensitivity to trimethyltin in rat hippocampus and facial nucleus

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Trimethyltin (TMT) is considered a useful tool to obtain an experimental model of neurodegeneration. TMT is known to cause neurotoxicant effects especially marked in the hippocampus. Despite many studies are published, there are poor literature on the interaction of this xenobiotic with dopaminergic system. In the present work, we investigate in rat brain, after 21 days following TMT intraperitoneal administration, the cells viability (N-NEU) and the animal behaviour in association with the immunohystochemical expression of dopamine receptors (D1- and D2-like) and transporters membrane (DAT) and vesicular monoamine trasporters (VMAT-1 and -2) in rat hippocampus and facial nucleus. The animal behaviour shows a significant reduction of spatial reference memory in a Morris water maze task according with the reduction (70% Vs control) of hippocampus dopaminergic system expression, despite the cell viability is maintained at about 50%. In the facial nucleus, a different reduction of dopamine receptors and trasporters (30% against 60%) was observed while the N-NEU reduction was 40%. These results suggest that the toxic interaction of TMT with the dopaminergic system in rat hippocampus may be responsible for learning and memory deficits. Data obtained in facial nucleus demonstrate different sensitivity of dopamine receptors and dopamine transporters to xenobiotic.

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