Abstract

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Inhibition of DNA repair synthesis in the rat by in vivo exposure to psychotropic drugs and reversal of the effect by co-administration with alpha-tocopherol.

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OBJECTIVE AND METHODS: Changes in unscheduled DNA synthesis (UDS) in lymphocytes and lipid peroxidation (LPO) in the rat brain regions cortex, hippocampus and hypothalamus were studied after 12 months of treatment with the neuroleptic fluphenazine (5 mg/kg b.w.), lithium (0.05% in drinking water), alpha-tocopherol (alpha-TP, 0.01% in drinking water) and the anticholinergic drug 7-methoxytacrine (0.1 and 1.0 g/kg in the diet).

RESULTS: Fluphenazine and lithium suppressed UDS and increased LPO in cortex and hypothalamus. 7-Methoxy-tacrine at the lower dose stimulated UDS, at the higher dose it suppressed UDS after 6 months of exposure. Simultaneous administration of alpha-TP with fluphenazine suppressed the increase in LPO and the decrease in UDS produced by the neuroleptic alone. alpha-TP plasma levels were increased in groups administered alpha-TP as well as the levels in the hippocampus.

CONCLUSION: Results indicate that the damage of biomembranes and the DNA repair enzymatic system as a consequence of fluphenazine action may be eliminated by the simultaneous administration of alpha-TP.

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