RISE IN ZINC AFFINITY FOR THE NMDA RECEPTOR
EVOKE BY CHRONIC IMIPRAMINE IS SPECIES-SPECIFIC

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Zinc and magnesium are potent inhibitors of the NMDA receptor complex. Previous reports demonstrated that both zinc and magnesium, like other NMDA receptor antagonists, exhibit antidepressant-like effects in rodent screening tests. Moreover, chronic treatment with antidepressants and electroconvulsive shock increase zinc concentration in the rat hippocampus. The present study examined the effect of tricyclic antidepressant, imipramine, on the potency of zinc and magnesium to inhibit [³H]MK-801 binding in the mouse and rat cerebral cortex and hippocampus. Chronic treatment with imipramine produced statistically significant increase in the potency of zinc to inhibit [³H]MK-801 binding in the mouse cerebral cortex but not in the hippocampus. However, this treatment neither influenced the zinc affinity in rat tissue nor magnesium affinity in tissue of both species. The present data indicate that, although imipramine-induced rise in zinc affinity to the NMDA receptor complex is in agreement with previously reported antidepressant-induced reduction of the NMDA receptor function, this effect is species-specific.

Key words: imipramine, NMDA receptor, zinc, magnesium, cortex, hippocampus, mice, rats