Amitraz alterations in estradiol content in CNS of male rats.

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INTRODUCTION

Amitraz is a formamidine insecticide/acaricide that alters different neurotransmitters levels, among other neurotoxic effects. Oral amitraz exposure (20, 50 and 80 mg/kg bw, 5 days) has been reported to increase serotonin (5-HT), norepinephrine (NE) and dopamine (DA) content and to decrease their metabolites and turnover rates in the male rat brain, particularly in the striatum, prefrontal cortex, and hippocampus. However, the mechanisms by which these alterations are produced are not completely understood. One possibility is that amitraz monoamine oxidase (MAO) inhibition could mediate these effects. Alternatively, it alters serum concentrations of sex steroids that regulate the enzymes responsible for these neurotransmitters synthesis and metabolism. Thus, alterations in sex steroids in the brain could also mediate the observed effects.

METHODS

To test whether amitraz alter sex hormones in the brain, we treated male rats with 20, 50 and 80 mg/kg bw for 5 days and then isolated tissue from striatum, prefrontal cortex, and hippocampus. We then measured plasma and tissue levels of estradiol (E2) and testosterone (T) in these regions.

RESULTS

Our results show that Amitraz treatment did not alter the content of E2 in plasma and T in the brain regions studied. However, amitraz induced a dose-dependent increase in T content in plasma and E2 content in the regions of prefrontal cortex, striatum and hippocampus from highest to lowest in this order.

CONCLUSIONS

Our present results provide new understanding of the mechanisms contributing to the harmful effects of amitraz.