



Sex hormones disruption after prenatal and postnatal exposure to chlordimeform in female and male rat's prefrontal cortex

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INTRODUCTION

Chlordimeform, as well as other formamidine pesticides, has been described to induce permanent sex- and region-dependent effects on development of monoaminergic neurotransmitter systems. The mechanisms that induce these effects are not known, but it has been suggested that these effects could be related to monoamine oxidase (MAO) inhibition. However, chlordimeform is a very weak MAO inhibitor, which suggests that other mechanism should be involved. In this regard, formamidines, in general, and chlordimeform, in particular, alter the serum levels of steroid hormones, which regulate the expression of enzymes that mediate the synthesis and metabolism of monoaminergic neurotransmitters. Therefore, an alteration of these hormones in the brain could mediate the effects observed.

METHODS

In order to confirm that the formamidines produce sex hormones disruption in the brain, we evaluated, in frontal cortex of male and female rats, the effect on the levels of testosterone and estradiol at 11 days of age after maternal exposure to chlordimeform (5 mg/kg body weight).

RESULTS

Treatment induced a significant decrease in testosterone and estradiol levels in prefrontal cortex of rats at 11 days of age. We observed sex interaction with treatment in the content of T and E2. The present findings indicate that after maternal exposure to formamidines, in general, and chlordimeform, in particular, a sex hormones disruption in frontal cortex is induced.

CONCLUSIONS

These results could explain the alteration observed in monoaminergic systems in the frontal cortex, in particular, and in the rest of brain regions affected after chlordimeform exposure, in general. Further studies are necessary to confirm the implication of our result in monoaminergic system alterations.

