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**Javier Del Pino**

Complutense University, Spain

Co-Authors

**Paula Moyano, María Jesús Díaz,
Gloria Gomez, María José Anadón,
Margarita Lobo, Jimena García,
Matilde Ruiz, José Manuel Garcia
and María Teresa Frejo**
Complutense University, Spain

Hippocampal testosterone and estradiol disruption in rats, after prenatal and postnatal exposure to chlordimeform

Chlordimeform, as well as other formamidine pesticides, induce permanent sex- and region-dependent effects on development of monoaminergic neurotransmitter systems. 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. In order to confirm that the formamidines produce disruption of sex hormones in the brain, we evaluated, in hippocampus 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). Chlordimeform induced a significant decrease in testosterone levels and a significant increase in estradiol levels in hippocampus 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 chlordimeform, a sex hormones disruption, in hippocampus, is induced.

Biography

Javier Del Pino has received his PharmD degree at the University Complutense University of Madrid in 2004. He specialized in Neuro Toxicology and Neurodevelopmental Toxicology and has received his PhD in Toxicology in 2009. In 2010, he worked in Institute of Health Carlos III in the National Center of Environmental Health. From 2010 to 2012 he was Associated Researcher at University of Massachusetts (UMASS) working in Sandra Petersen's Lab in a National Institute of Health (NIH) project on developmental effects of TCDD endocrine disruptor on sexual differentiation. In 2016, he got a position as an Associated Professor of Toxicology at the Complutense University of Madrid.

jdelpino@pdi.ucm.es

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