

Human Brain microRNA in Chlorpyrifos Toxicity and Analysis of their Target Gene Network

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ABSTRACT

Chlorpyrifos, a popular organophosphate insecticide, is known to cause developmental neurotoxicity through unknown mechanisms. MiRNAs are posttranscriptional regulators with diverse functions and its misexpression is associated with diseased states. In this study, the involvement of miRNAs in Chlorpyrifos neurotoxicity was determined using bioinformatic tools. Forty-seven miRNAs were predicted to target thirty-seven genes associated with Chlorpyrifos toxicity. The top network generated from the 37 genes showed that miRNA involvement in Chlorpyrifos neurotoxicity could partly explain disruption of glutamate uptake, glial cell function and survival, and Parkinson's disease, although spatial learning in rats are contradicted.

KEYWORDS: bioinformatics; microRNA; chlorpyrifos; neurotoxicity