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THE CHRONIC EXPOSURE TO ABAMECTIN CAUSES SPATIAL MEMORY DEFICIT AND DEPRESSIVE BEHAVIOR IN MICE

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ABSTRACT

It is known that abamectin (ABA), which is a component belonging to the group of avermectins, has been broadly used as biopesticide. Although its effect on non-target aquatic organisms is known, knowledge about its impacts on terrestrial animals such as mammals remains incipient. Thus, we aim at investigating the effects (physical and neural-behavioral) from the chronic exposure (90 days) to ABA (1/10 of LD₅₀) on Swiss and C57Bl/6J mice from both sexes. Accordingly, at the end of the experimental period the animals were subjected to the following tests: Novel Object Recognition Test (NORT), Morris Water Maze (MWM), Tail Suspension Test (TST), and Forced Swimming Test (FST). We showed that the new-object recognition indexes in the NORT test sessions did not differ between experimental groups; however, animals exposed to ABA, regardless of sex or strain, recorded longer latency time to find the quadrant holding the platform in the MWM training sessions, as well as stayed shorter in this quadrant. Such results highlight the negative effect of the pesticide on the animals' spatial memory evocation, without evident influence from their genetic status and sex. With regard to TST, we also did not observe differences in immobility time between groups; however, Swiss mice (males and females) presented depressive behavior in the FST, and apparent influence from their genetic status in their responses during the test. Therefore, our study confirms the neurotoxic potential of ABA and is pioneer in reporting memory deficit and depressive behavior in mammal experimental models.

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