

Evaluation of Acetylcholinesterase, Glutathione S-Transferase and Catalase Activities in the Land Snail *Helix aspersa* Exposed to Thiamethoxam

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Abstract : In Algeria, the use of insecticides and other phytosanitary products are considerably spreading with the development of agriculture. But, the analyses of the residues of pesticides are not systematically made. In this context, we estimated through an experimental study, the effect of a neonicotinoid insecticide, the thiamethoxam which is used as a commercial preparation on the land snail *Helix aspersa*. This snail is one of the most abundant gastropod in North-East Algeria. Little information is available in the literature concerning the study of the biochemical markers of mollusks which are exposed to insecticides and especially, thiamethoxam. In this work, adult snails *Helix aspersa* were used to estimate the effect of a neonicotinoid insecticide (thiamethoxam) on the acetylcholinesterase (AChE), glutathione S-transferase (GST) and catalase (CAT) activities in this gastropod after a treatment of 6 weeks. During this period, snails were exposed by ingestion and contact to fresh lettuce leaves which were soaked with an insecticide solution. The thiamethoxam test solutions were 0, 25, 50, 100 and 200 mg/L, which are lower or equal to the concentrations that are applied in field. The results showed that the enzymatic activities of AChE and GST and CAT increased significantly with a dose-dependent manner. These results confirmed the toxic effect of thiamethoxam on snails exposed to the lettuce contaminated with this neonicotinoid insecticide, likely to be used as biomarker of exposure, at first to thiamethoxam then to other insecticides belonging to the same chemical family, currently present in the environment.

Keywords : *helix aspersa*, insecticide, thiamethoxam, AChE, GST, CAT

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