

## Effect of thiamethoxam on cockroach locomotor activity is associated with its metabolite clothianidin

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R�sum� en anglais	<p>BACKGROUND: In the present study, the effect of thiamethoxam and clothianidin on the locomotor activity of American cockroach, <i>Periplaneta americana</i> (L.), was evaluated. Because it has been proposed that thiamethoxam is metabolised to clothianidin, high-performance liquid chromatography coupled with mass spectrometry was used to evaluate the amount of clothianidin on thiamethoxam-treated cockroaches.</p> <p>RESULTS: One hour after neonicotinoid treatment, the time spent in the open-field-like apparatus significantly increased, suggesting a decrease in locomotor activity. The percentage of cockroaches displaying locomotor activity was significantly reduced 1 h after haemolymph application of 1 nmol g<sup>-1</sup> neonicotinoid, while no significant effect was found after topical and oral administration. However, at 24 and 48 h, all neonicotinoids were able to reduce locomotor activity, depending on their concentrations and the way they were applied. Interestingly, it was found that thiamethoxam was converted to clothianidin 1 h after application, but the amount of clothianidin did not rise proportionately to thiamethoxam, especially after oral administration.</p> <p>CONCLUSION: The data suggest that the effect of thiamethoxam on cockroach locomotor activity is due in part to clothianidin action because (1) thiamethoxam levels remained persistent 48 h after application and (2) the amount of clothianidin in cockroach tissues was consistent with the toxicity of thiamethoxam.</p>

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