

Impact of *Harmonia axyridis* on native ladybird species in Belgium: 2. Intraguild predation revealed by exogenous alkaloid sequestration.

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The Multicoloured Asian Ladybird, *Harmonia axyridis*, has invaded the whole of Belgium in less than five years. In parallel, decline of some native ladybird species such as *Adalia bipunctata* and *A. decempunctata*, was observed in tree habitats. Laboratory studies have reported that *H. axyridis* acts as an intraguild predator, resulting in high risks for the survival of native species. In order to assess the real impact of *H. axyridis* on aphidophagous guilds, it is important to determine the frequency of intraguild predation (IGP) in natural conditions, in the presence of extraguild prey (e.g; aphids). Therefore, a method for detecting IGP by *H. axyridis* on native coccinellids was developed based on detection of exogenous alkaloids from native ladybirds in *H. axyridis* larvae using Gas Chromatography - Mass Spectrometry. The analysis of *H. axyridis* larvae collected in several habitats revealed trace of exogenous alkaloids produced by other coccinellid species: adaline (*Adalia* spp.), calvine (*Calvia* spp.), precoccinelline (*Coccinella* spp.) and propyleine (*Propylea quatuordecimpunctata*). The presence of these alkaloids in *H. axyridis* larvae confirms the existence of intraguild predation in the field towards native coccinellid species. To date, on 599 larvae *H. axyridis* collected from lime trees and analyzed, 122 larvae contained exogenous alkaloids and 90% of these alkaloids were adaline. These results support the hypothesis that IGP on *Adalia* spp. could explain the observed decline of these species in trees.

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