
Chemical cues affect the feeding choices in lichen-snail trophic interactions

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Abstract

Plant metabolites often rule predator/prey relationships. Because lichens are sessile and slow-growing symbiotic organisms, they must defend strongly against lichen-feeding invertebrates, including gastropods. Snails are usually active at sunset, especially when the weather is rainy. While secondary metabolites might protect the lichen from attack by a deterrent effect, rainy conditions could enhance leaching of metabolites at the thalli surface, which could be detected by oral tentacles or foot and orientate the feeding decision. Here, we studied the land snail *Notodiscus hookeri* that lives in Crozet Archipelago and feeds exclusively on lichens. We assumed an opportunistic foraging behaviour of the snail followed by tasting lichen surface, whatever the snail met this lichen in its habitat or not, and consumption or rejection. To test our hypothesis, we compared the feeding choices of adult snails among different species of lichens placed by paired in experimental arenas, the species being selected according to their occurrence (presence *versus* absence) in the snail habitat. Furthermore, to assess the possible phagostimulant or phagodeterrent effect of lichen metabolites on the snail feeding decision, (i) snails will be given choice between intact and acetone rinsed lichens of the same species to remove lichen secondary metabolites without altering lichen viability, and (ii) no-choice experiments will be realized by incorporating the main isolated metabolites in waxy starch supports. The profiling and quantification of the major primary and secondary metabolites were simultaneously investigated.

Keywords: Foraging behavior, feeding choices, lichens metabolites, snails, sub, Antarctic

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