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Veterinarni Medicina

Antipredator pheromones in amphibians: a review

J. Rajchard

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Specific chemosignals (pheromones) have an important role in the antipredator behaviour in amphibians and other vertebrates. However, relatively little is known about the occurrence of chemical alarm cues just in amphibians. The site of chemosignals perception is vomeronasal system. The presence of the vomeronasal system in aquatic amphibians indicates that it did not arise as an adaptation to terrestrial life. Predators may inhibit mate search of some species, and male newts probably take greater risks during the breeding season. Field tests demonstrated different responses to male newt extract – probably trade-off that incorporates risk and resource sensitivity.

been documented for tadpoles of frog and for several species of salamander. The response of tadpoles to predator includes morphological modifications and influence of coloration, growth and development retardation. Tadpoles of *Rana aurora* release a chemical that provides conspecifics with an early warning of predator presence. *Bufo boreas* tadpoles living in the presence of conspecific alarm cues and chemosignals of specific predators reduce the time of metamorphosis in order to reduce the time in the presence of its predators. Presence of conspecific alarm substances in water and predators' waste products have an important role in the chemical detection of predators by tadpoles of *Rana temporaria* and *Bufo bufo*. Tadpoles of *Rana utricularia* significantly decreased the growth and increased the mortality of *Hyla cinerea* tadpoles on the basis of behavioral and chemical interference. *Rana utricularia* tadpoles apparently use both chemical interference and aggressive behavior in securing a competitive advantage over *H. cinerea* tadpoles. The response of tadpoles of *Rana aurora* to tadpoles of

Taricha granulosa appear be similar to their response to tadpole extract in eliciting alarm, while insect-fed newts would have less of an effect since predators consuming other species may be less of a threat. In some cases (e.g. in *Bufo bufo* and *B. calamita*) chemosignals released in response to threat by predators (direct attack or detection of the predator scents) exert their effects across species.

Keywords:

infochemicals; vomeronasal system; toad; newt; salamander; frog; tadpole; predator

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