Interactions between diet and behavior in the death-feigning snakes

*Heterodon nasicus* and *H. platirhinos*

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Abstract

Hognose snakes are well-known for their peculiar defensive behavior of death-feigning. However, the full significance of this behavior is far from clear. Many of these snakes’ predators are carrion eaters, and the rapid onset of death-feigning suggests that it is involuntary. Furthermore, several authors have suggested an interaction with the bufotoxin-rich diets of these toad specialists. Parotid gland secretions of Bufonid toads include many of the same endogenous stress hormones known to play a role in detoxification and regulation of stress hormones. Many of these species also possess enlarged adrenal glands (7), known to play a role in detoxification and regulation of stress hormones. In *Heterodon*, these are sexually dimorphic and present at birth (12,13), as is the death-feigning behavior (1).

Further Evidence

Several other snake species in the families Elapidae, Viperidae, Natricidae and Xenodontidae exhibit both bufophagia and death-feigning but are unrelated to *Heterodon* (4). One species, *Rhabdophis tigrinus*, is known to sequester bufotoxins for defensive secretion from nuchal glands, and to transfer such sequestered toxins from mother to offspring (5).

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**Top-down - Predators**

**Bottom-up - Prey**

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References