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FEMORAL GLAND SEMIOCHEMICALS FACILITATE SPECIES RECOGNITION BETWEEN TWO SYMPATRIC LIZARD SPECIES

By

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Abstract

In many animals, chemical signals play an important role in species recognition and may contribute to reproductive isolation and speciation. There are many specialized glands in the skin of vertebrates, that produce secretions which in turn carry chemical signals. Being devoid of glands, the reptilian skin is usually described as dry skin. Occasionally there are integumental glands, named femoral glands or pre-anal glands in squamates. The lacertid lizards, and genus *Acanthodactylus* in particular, have well developed femoral glands with confirmed role in communication. Squamates are useful model organisms in studying sympatric ecology. *A.boskianus* and *A. scutellatus* are often sympatric, and provide an excellent model for the study of chemically mediated species recognition, using femoral gland secretions, in closely related taxa. In the present study, we tested the ability of male and female lizards of two sympatric species with widely overlapping distribution ranges to discriminate between conspecific and heterospecific lizards by using only femoral gland secretions-derived chemical cues. Using GC-MS technique we scanned the chemical components of the femoral secretions in both species. We also scored the number of tongue flicks, directed at the chemical stimuli derived from femoral secretions, by each individual in its own terrarium. Results show that lizards are capable of discriminating chemically between conspecifics and heterospecifics of the same and

opposite sex. Chemical analysis of the secretions resulted in the identification of natural compounds previously reported only in lizards such as glycerolmonoethers and monoglycerides. In addition, many reported compounds are frequently found in epidermal glands. Sexual and interspecific chemical variation are detected with the latter, as more differences than previously recorded in interpopulational differences. The behavioural trials results reflect the variation in the chemistry of femoral secretions on both levels (the sexual and interspecific levels). These results suggest that chemical cues may contribute on both species recognition and reproductive isolation in these species. Our results suggest that the components of femoral gland secretions have diverged in their composition and these differences contribute to species recognition between sympatric lizard species. Moreover our results concerned with behaviour trials and the ability to discriminate conspecific from heterospecific lizards, together with the results of chemical analyses are discussed in the context of sexual selection and species discrimination.