COLOUR MORPHS AND IMMUNITY IN MALE WALL LIZARDS *(PODARCIS MURALIS)*

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Males of several species of lizards show discrete polymorphic color badges, each morph adopting an alternative mating strategies that involve different expression of aggressiveness or territoriality (Zamudio and Sinervo 2002, in Fox S.L. et al 2002, Johns Hopkins University Press, pp 83-106). In this study we investigated whether male color morphs of the wall lizard *Podarcis muralis* reliably signal T-cell mediated immune response, which reflects the ability of individuals to face diseases and parasite infestations, and is an important fitness trait that reliably predicts viability.

We collected 38 adult males from 4 sites near (Northern Italy, 45°11'N – 9°9'E), between 29 April and 2 June 2005. Body length (SVL) was measured and each male classified as white, yellow or red according to throat color. The variation of T-cell mediated immunity among color morphs was assessed by the delayed cutaneous hypersensitivity (DCH) test, which is based on a subcutaneous injection of phytohaemoagglutinin (PHA), a mitogen which causes local swelling and oedema (Goto et al. 1978, Poultry Sci. 57:246-250). T-cell response was assessed as the change of thickness of the right foot six hours after injection (Belliure et al 2004, J. Exp. Zool. 301A:411-418). The effect of male color on the response to PHA injection was assessed by a mixed model analysis of variance

The intensity of the T-cell mediated immune response was significantly related to male throat color ($F = 3.48$, df = 2,34, P = 0.042) but not by the collection site (Likelihood-ratio test = 1.79, df = 1, P = 0.15). The PHA swelling response was lower in yellow-throated males compared to both white- and red-throated males (yellow-white: P = 0.045; yellow-red: P = 0.014), and did not differ between red and white throated males (P = 0.26). Finally, the immune response increased according to male SVL ($F = 4.98$, df = 1.33, P = 0.033, estimate: 0.011 ± 0.005 SE). These results indicate that immune function is morph-specific in male wall lizards, suggesting that male color may advertise different male attributes and that immune response is a condition-dependent trait.

Key words: Podarcis muralis, *immunocompetence, colour polymorphism, PHA*