

EFFECT OF PREY AVAILABILITY ON GROWTH RATES IN VIPERINE SNAKE AT THE IBERIAN PENINSULA.

The energy gained by an organism is used for reproduction, growth and maintenance. Habitats with different prey availability can induce different growth rates and maximum reached size. We have estimated the ages of three populations of viperine snake (*Natrix maura*) by studying growth lines in the ectopterygoid. On the one hand the population of the Ebro Delta has adapted to a high pressure from human activity due to the rice crops, which delays the onset of spring feeding at least one month in respect to other populations of the Iberian Peninsula. On the other hand, Riofrio's (Granada) population consists of individuals collected from a fish farm. These snakes have an *ad libitum* availability of food. Finally, the Matarranya River (Zaragoza and Teruel) population correspond to a less disturbed environment driven by a Mediterranean river dynamic. Preliminary observations indicated smaller body sizes in the Delta population. The maximum observed age was 22 years in a Matarranya's female. The growth curves fit: a quadratic function that reaches its asymptotic value when growth stops. This happens at the age of 19 for males and 20 for females. At this size, the Ebro Delta males measured 410 mm SVL and 481 mm SVL in Riofrio. Females' results were similar, with larger sizes in Riofrio and Matarranya than in the Ebro Delta. These results suggest that growth rates among the three populations are different due to differences in the active feeding period and prey availability. The overlap in results between Matarranya and Riofrio suggests that for the viperine snake, the prey availability in the Matarranya River is comparable to that of the fish farm.

P-76**RESPOSTAS DE BIOMARCADORES BIOQUÍMICAS NUM LACERTÍDEO (PODARCIS BOCAGEI) APÓS EXPOSIÇÃO A CLORPIRIFOS**

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Os répteis são um dos grupos menos estudados em ecotoxicologia e apesar de um aumento recente no número de estudos, existe contudo uma enorme falha de conhecimento em relação a sua resposta à contaminação ambiental. A nível europeu, os lacertídeos têm sido identificados como uma potencial espécie modelo para a ecotoxicologia de répteis. Neste estudo, foram examinadas as respostas bioquímicas de *Podarcis bocagei* após uma exposição a um insecticida organofosforado. Machos adultos de *P. bocagei* (peso corporal médio: 4.5 g) foram expostos em condições controladas a uma formulação comercial de clorpirifos (480 g/L). Os diferentes indivíduos foram aleatoriamente atribuídos a três tratamentos: control, 96 mg/L (0.21 µg cpf/g de lagartixa) e 960 mg/L (2.1 µg cpf/g de lagartixa) e alimentados a cada dois dias com dois tenébrions injectados com a respectiva solução, durante um período de 20 dias. Durante a experiência não ocorreu mortalidade nem se observaram sintomas comportamentais de envenenamento em nenhum dos animais. No final do período de alimentação, os animais foram sacrificados e diferentes tecidos recolhidos para análises bioquímicas. A actividade das enzimas antioxidantes, glutathione S-transferase (GST), glutathione reductase (GR), glutathione peroxidase (GPx) e o rácio de glutathione reduzida/oxidada (GSH/GSSG) foram quantificadas no fígado, intestino, testículo e no cérebro de *P. bocagei*. A inactivação/inibição da acetilcolinesterase (AChE) e das carboxilesterases (CbE) foi medida no cérebro, fígado e testículos, respectivamente. As enzimas de stress oxidativo apresentaram diferenças quanto à sua actividade entre os tratamentos mas estas diferenças não foram significativas. No entanto, a actividade média das CbE e da AChE nos animais expostos ao clorpirifos diminuiu significativamente em comparação com os animais control em todos os tecidos. A actividade das esterases também variou entre tecidos. Este estudo confirma a importância de medição de biomarcadores bioquímicos para determinar a exposição em animais nativos a organofosforados.

Lizards are among the least studied groups in ecotoxicology, and despite a recent increase in the number of studies, there is still a lack of knowledge regarding their response to environmental contamination. In Europe, lacertid lizards have been identified as potential model species for reptile ecotoxicology. In this study we examined the biochemical responses of *Podarcis bocagei* following exposure to an organophosphate insecticide. Adult males of *P. bocagei* (average body mass 4.5 g) were exposed in controlled conditions to a commercial formulation of chlorpyrifos (480 g/L). Individuals were assigned to 3 treatments: control, 96 mg/L (0.21 µg cpf/g of lizard) and 960 mg/L (2.1 µg cpf/g of lizard) and given two live injected mealworms, every two days over a 20 day period. No mortality or behavioral symptoms of poisoning were observed. Animals were sacrificed and dissected at the end of the feeding period and tissues collected for biochemical analysis. The activity of antioxidant enzymes, glutathione S-transferase (GST), glutathione reductase (GR), glutathione peroxidase (GPx) and ratio of reduced and oxidized glutathione (GSH/GSSG) activity were measured in the liver, intestine, testis and brain of *P. bocagei*. Acetylcholinesterase (AChE) and carboxylesterase (CbE) inactivation/inhibition were measured in brain and liver, intestine and testis, respectively. The activity of oxidative stress enzymes showed some differences between the different treatments but these differences were not significant. Mean values of CbE and AChE for samples from animals exposed to chlorpyrifos decreased when compared with control animals in all tissues. Esterase activity varied between tissues. This study confirms the importance of measuring biochemical biomarkers within a multibiomarker approach to assess field exposure to organophosphates.

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ABUNDANCE AND BIOMASS CONTROLLERS OF TROPICAL LIZARDS ASSEMBLAGES: A CASE STUDY IN THE BRAZILIAN ATLANTIC RAINFOREST.

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Traditionally, the relationships between environmental factors (such as microhabitat or habitat features) and lizard community attributes have been interpreted as the effect of these factors acting on most species within the community. However, the influence of dominant (e.g., the most abundant, the heaviest) species on such relationships has not been evaluated. In this study, the following relationships are evaluated: (i) lizard population abundance vs. availability of their most-used microhabitat (one analysis per species), (ii) community attributes (composition, abundance, and biomass) vs. vegetation structure, first including and then excluding the most abundant or the heaviest species. From a 21 lizard species community, the abundances of only three were significantly related to their most-used microhabitat. Community composition and abundance were significantly related to vegetation structure, whereas community biomass was not. After removing the most abundant (*T. hygomi*) and the heaviest (*T. merianae*) species, the relationship between abundance and habitat gradient became non-significant and the biomass-gradient relationship became significant. This study suggests a shift toward dominant-species-centered approaches for further advancement in the comprehension of relationships among microhabitats, habitats, and community characteristics in tropical lizard communities.