

Abstract

Keeping a balanced state in terms of liquids in an organism, especially evaporative water loss regulation, is essential for all terrestrial animals, including reptiles. Respiratory water loss and cutaneous water loss account for the highest percentage of total water loss. For this reason, the degree of evaporative water loss in reptiles can be primarily influenced by body dimensions, metabolism intensity and morphology of body surface scales.

This thesis focuses on water loss through evaporation in Madagascan *Paroedura* geckos. The *Paroedura* are suitable for this research because they represent a monophyletic genus with a strongly supported hypothesis about phylogenetic relationships. The thesis adds some facts to this theory. At the same time, individual *Paroedura* species differ in body dimensions and habitat preference. The aim of the thesis was to find out whether individual representatives of *Paroedura* differ in TEWL, to specify the characteristics of the ancestral state of TEWL in this genus and to test which morphological and physiological factors influence TEWL. Further aim was to measure cutaneous water loss. Measuring was carried out by flow-through respirometry. The results show that individual representatives of *Paroedura* differ remarkably in TEWL figures. The reconstruction of the ancestral state implies that the original TEWL was rather high. The majority, namely nine out of eleven genera included in the analysis, has a remarkably lower TEWL. A comparison of TEWL with the preferred habitat of studied species shows that the species living in humid rainforest areas have remarkably higher figures and TEWL tends to decrease with the transition to a more arid environment. The best predictors explaining TEWL are the weight and size of ventral scales. However, the size of the scales obviously strongly correlates with weight. Cutaneous water loss measurement confirms TEWL measurement and the figures are the highest in species living in tropical rainforests. The results of the thesis imply that the frequently observed negative correlation between TEWL and aridity of the environment can be seen in *Paroedura* genus as well. *Paroedura* species were able to adapt to environments with various degrees of aridity owing partly to TEWL changes and thus were able to settle in various habitats.

Key words: aridity, geckos, Madagascar, reptiles, metabolic rate, scales, body size, evaporation