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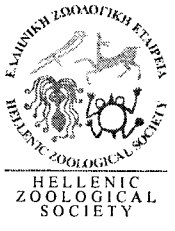

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THE EFFECT OF ACCLIMATION TO CONSTANT TEMPERATURES, POLLUTION OF FOOD BY HEAVY METALS AND SHORT TERM FASTING ON METABOLIC ACTIVITY OF *GLOMERIS BALCANICA* (DIPLOPODA: GLOMERIDAE)

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The diplopod *Glomeris balcanica* is classsified among the most important agents of litter breakdown in the severe northern Greek Mediterranean environments. Changing temperature regimes have an important effect on the respiratory metabolism of this animal. In this study beyond changing temperature regimes the respiratory response of *G. balcanica* to stressfull factors like polluted food and fasting were investigated. Measurements of oxygen consumption were chromatographically taken on single animals fed on food with heavy metal burdens along with control ones, both incubated for 5h at 4, 13, 20 and 25 °C. To estimate respiratory metabolism at fluctuating temperatures, measurements were made on animals reared under diurnally oscillating temperature. The effect of fasting was investigated on animals isolated from food resource for three days.

A left skewing response *G. balcanica* to varying temperature is revealed. Fluctuating temperature stimulates the metabolic activity of this animal, whereas a three-step acclimation to constant temperature is observed. Short-term acclimation results in strongly depressed metabolism, mid-term acclimation induces metabolic stepping up, whereas long-term acclimation results in an irreversible decline in metabolic activity. Heavy metal burdens of food do not affect the type of the left skewing thermal response of animals, although it depress the metabolic level, shortens the tolerance range by shifting down the upper tolerance threshold, enlarges the optimal range (metabolic constancy) and stimulates the faster activation of the metabolic compensatory mechanism. Finally, no effect of short-term fasting was detected.