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Effect of season and sex on the locomotor activity rhythm of the desert isopod *Hemilepistus reamurii*

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ABSTRACT

Freshly collected individuals of *Hemilepistus reamurii* from the marginal zone of a salt lake in Bchachma (Middle of Tunisia) were seasonally housed in a controlled environment cabinet. The aim of this study was to investigate the effect of sex on the locomotor activity rhythm of this species. Locomotor activity rhythm of males and females of this species was recorded during each season under light-dark cycle (nLD) at a constant temperature of $18 \pm 0.5^\circ\text{C}$. Results showed that both males and females of *H. reamurii* exhibited a day activity in late winter and in spring and a crepuscular activity during the other seasons. Results showed also that the locomotor rhythms of males and females were controlled by an endogenous component with circadian period. Furthermore, locomotor rhythm was more stable and better defined in males than in females during spring under constant darkness. The most important locomotor activity time (α) was recorded in winter and spring whatever the sex. However, our finding demonstrated that males were more active than females in late winter. On the other hand, females were more active than males during spring. The variation of activity patterns according to the sexes and seasons is discussed.

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Locomotor rhythm; male; female; entraining conditions; arid environment

1. Introduction

Locomotor activity patterns of desert arthropods may be affected by abiotic factors (e.g. environmental conditions, habitat structure and quality). The most important strategy of desert arthropods consists of living in burrows where the air humidity is high and the temperature is moderate (Cloudsley-Thompson 2001). Moreover, they limit their surface activity at specific periods of the year and/or at specific periods of the day. In natural environments, the exogenous components adjust the circadian activity rhythm of animals with daily periodicity of 24 h. This day-night alternation was the most important synchronizer as shown by Aschoff and Gerkema (1985).

The burrowing terrestrial isopod *Hemilepistus reamurii* which is extremely common in the arid region of North Africa, Middle East and Central Asia (Lincoln 1970) exhibits daily activity pattern. To avoid extreme heat and dryness, individuals must spend most of their