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Impact of stress on excretion in earthworm (*Perionyx excavatus*) (Article)

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Abstract

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In the present study, the nature of excretory products and the impact of stress on the rate of excretion of the megascolecid earthworm, *Perionyx excavatus* was studied. Excretion in *P. excavatus* was analyzed with reference to three aqueous media: tap water, distilled water and 1% Sodium chloride. Clitellate worms (N=5.) were taken for the study and nitrogenous products (ammonia and urea) eliminated in the three media were analyzed for twenty four hours, sampling was carried out at an interval of two hours. In order to assess immediate response in the first one hour, samples were also taken at the end of 30 minutes, 45 minutes and 60 minutes, during the first one hour of observation. After 60 minutes, the worms excreted 0.023 mg ammonia and 1.451 mg urea in the tap water; 0.014 mg ammonia and 1.397 urea in distilled water; and 0.030 and 1.076 mg ammonia and urea in 1% NaCl. After 60 minutes, under heat stress, the worms excreted 0.011 mg ammonia and 0.578 Urea in the tap water; 0.006 mg ammonia and 0.682 mg urea in the distilled water; 0.009 mg ammonia and 0.520 urea in the 1% NaCl solution. Animals exposed to H2SO4 stress, excreted 0.034 mg ammonia and 1.023 mg urea in the tap water; 0.040 mg ammonia and 0.645 mg ammonia and 0.620 mg urea in the 1 % NaCl solution. The worm survived 24 hours in the tap water excreting ammonia urea in the distilled water; 0.03 mg (0.188 mg) and urea (0.926 mg) and the latter at higher amount indicating that *P. excavatus* is primarily ureotelic and also capable of excreting ammonia. The worm did not survive beyond eight hours in the distilled water and 1% NaCl. The present study clearly demonstrates that the earthworm *P. excavatus* is primarily ureotelic and revert to ammonotelism under stress situation. © Penerbit UMT.

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