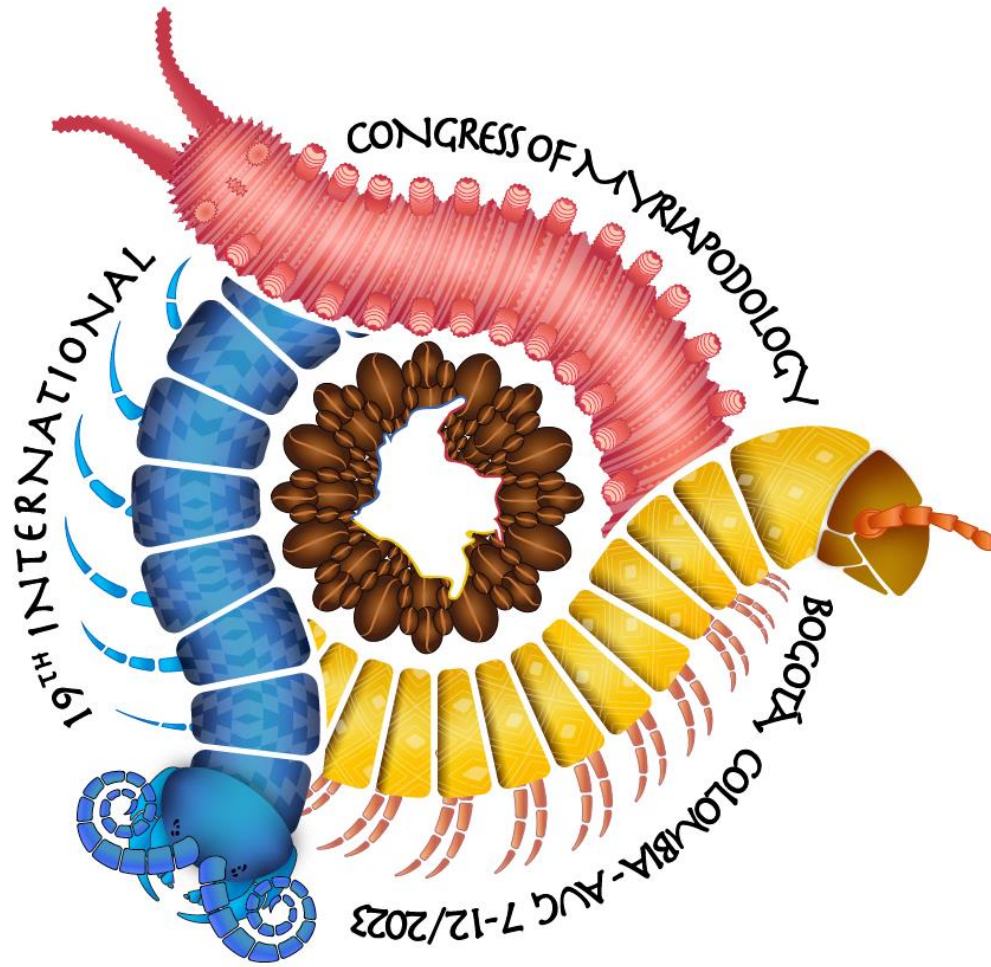




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PROGRAM AND ABSTRACTS  
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## Antioxidant defences in centipedes (Chilopoda): a question of sex

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Sex-specific physiology includes a set of physiological traits that differ markedly between males and females of the same species. In addition to the most obvious differences between the sexes, such as reproductive roles controlled by sex-specific endocrine systems, it has been demonstrated that the sexes may also differ in their oxidative physiology. Centipedes, like other animals, possess a suite of antioxidant enzymes (AOEs) and non-enzymatic antioxidants that delay, prevent, or remove oxidative damage to target molecules. The aim of the present study was to investigate sex-specific differences in the antioxidant defence system in three centipede species from the Balkan Peninsula.

Here, we measured the activity of the following AOEs: superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GSH-Px), glutathione reductase (GR), and glutathione S-transferase (GST), as well as the concentrations of sulfhydryl (SH) groups and glutathione (GSH) in males and females of *Eupolybothrus transsylvanicus*, *Cryptops anomalans*, and *Clinopodes flavidus*. In addition, we measured lipid peroxidation (LPO) and protein carbonyl (PCO) concentrations in the species studied to investigate whether sex-specific trends in the activity of AOEs may lead to the occurrence of oxidative damage.

*E. transsylvanicus*, *C. anomalans* and *C. flavidus* were collected by hand from under stones and bark on Ada Ciganlija Island (Belgrade, Serbia) in October 2022. The sexes were distinguished by external characteristics or by dissection of genital appendages. The biochemical and statistical analyses were performed following our previous work in the field.

Overall, the most significant differences were found between *E. transsylvanicus* and *C. anomalans* in the following parameters: SOD, CAT, GR, SH groups, LPO, and PCO; then between *C. anomalans* and *C. flavidus* (GSH-Px, GR, SH groups, LPO, and PCO), whereas the least significant differences were between *E. transsylvanicus* and *C. flavidus* (GSH-Px only). Besides, SOD, GSH-Px and GSH showed significant differences between males and females of *E. transsylvanicus*. In *C. anomalans*, GSH-Px and GSH were significantly divided by sex, while in *C. flavidus* this was true only for GST. Moreover, all measured AOEs in *E. transsylvanicus* had higher values in males, while in the other two species the situation was reversed – the studied parameters were higher in females.

Thus, the level of antioxidant defences depends on the species and sex of the centipedes studied. Our results also suggest that females of centipedes that exhibit parental care, such as *C. anomalans* and *C. flavidus*, have better antioxidant status than males. This provides a starting point for future research on the evolutionary causes of sex specificity in the oxidative physiology of centipedes.

