

Characterization of Sulfated Polysaccharides During Development in Three Species of Earthworms (Annelida, Oligochaeta)

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Earthworms have long been recognized as excellent biomonitors of several kinds of pollutants in soil, particularly for metals. Several studies have shown by histochemical methods the presence of sulfated mucosubstances in mucous secretions and in the epithelium of earthworms; however, little is known regarding its biochemical composition and occurrence during earthworm development. Therefore, the aim of this study was to characterize the composition of sulfated polysaccharides (SP) during development in three species of earthworms, *Eisenia andrei*, *Eudrilus eugeniae* and *Amyntas gracilis*. SP were extracted from the body of earthworms to identify their composition and their times of appearance and disappearance in newborn, juvenile and adult stages. Worms with a full clitellum were recorded as adult, those with no clitellum as juveniles and individuals recent emerged from cocoon as newborn. Purified SP obtained from the body of adult earthworms from the three species were analyzed by anion exchange chromatography on Mono Q FPLC column and agarose gel electrophoresis. Sulfated glycosaminoglycans (S-GAGs) composed of heparan sulfate (HS) plus chondroitin sulfate (CS) and heparin eluted with 1,0 M and 1,5M NaCl, respectively, while an unknown highly SP eluted with 3,0 M NaCl. A similar qualitative composition was also obtained from juvenile earthworms. At this point, our results suggest that sexual maturity seems to have no influence on the SP composition in earthworms. HS and CS were by far the predominant SP in newborn earthworms suggesting important roles for these S-GAGs in earthworm development.