Investigating inorganic and organic contaminant effects in free-living nematodes: a multifaceted approach combining single-species and community assays

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Since the past few decades, nematodes have been proven to be excellent biological indicators, including contaminant effects. However, research traditionally have focused either on molecular, individual or community assessments, limited to an environmental compartment type, e.g. marine. Our study combines, thus, ecotoxicological investigations over different freshwater and marine nematode species, including single-species (more specific and controllable) and community assays (ecologically more relevant) for a better understanding of the contaminant effects in nematodes' aquatic communities. Single-species tests included a variety of acute and chronic toxicity experiments. Additionally, we investigate the direct effects of either organic (crude and motor diesel oil) and/or inorganic pollutants (heavy metals) in benthic nematodes. Our results indicate that pollutants effects are species specific, including differences in sensitivity among cryptic species. Although mainly freshwater/soil nematodes have been routinely used in toxicity testing (e.g. *Caenorhabditis elegans*), we show that many cultivated marine/estuarine nematode species are reliable test organisms and potential model species. Species sensitivity varies according to the type of pollutant, concentration level and exposure route. Therefore, we have enough evidence to support the recommendation that (eco) toxicity tests should include a variety of experiments, varying in design, exposure routes and test species, for a complete assessment of contaminant effects in the environment.

Considering cohesive sediments for the chemical and ecological status of aquatic ecosystems – new lines of evidence for a Weight-of-Evidence (WoE) approach based on nematodes

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Toxicants accumulated in fine, cohesive sediments impair the functioning of the benthic community that holds fundamental ecosystem services (e.g. nutrient cycling). Moreover, contaminated sediments represent a permanent source of pollutants for the water phase. Thus, polluted cohesive sediments can impede the achievement of a good chemical and ecological status of aquatic ecosystems and should therefore be considered for the quality assessment of water bodies. However, most of the monitoring tools and pollution indicators cannot be applied to cohesive sediments, as they