

POSTER 114

Eisenia Fetida – preliminary data

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Resumo

Introduction: The human consumption of psychoactive substances (PAS) leads to the release of these substances and their metabolites to water systems [1] and can reach water treatment plants (WTP). The sewage sludges resulting from the wastewater treatment plants (WWTP) can be used as soil amendments in agricultural soils [2] and, but this way, the terrestrial systems can be affected due to the PAS content in these organic wastes. Metaphedrone (3-MMC) is a recent PAS and, although it is legally controlled in many countries, these substances are easily available for purchase and frequently found in recreational settings [3]. Due to the increase of its consumption, its presence in soils amended with organic wastes is increasingly more frequent. Therefore, it is important to evaluate its toxic effects to soil organisms, like to the earthworms *Eisenia fetida* that are considered soil health bioindicator [4]. **Objectives:** The aim of this study was to evaluate the toxic effects of 3-MMC in the avoidance behaviour and reproduction of *E. fetida*. **Materials and Methods:** Avoidance tests were performed, following the ISO 17512-1, and using adult earthworms exposed to a clean soil

and a soil contaminated with different concentrations of 3-MMC (25, 250 and 2500 µg/kg) for 48 hours. Earthworm reproduction test were also performed using adults of the same species exposed to a gradient of soils with increasing concentrations of 3-MMC over 56 days following the methods of ISO 11268-2. For both laboratory test, 3 replicates were performed. **Results:** No statistically significant effects were observed on either avoidance behaviour or reproduction of adult earthworms exposed to 3-MMC. However, in the reproduction test for the concentration of 2500 µg/kg, there was a slight increase in the number of juveniles (not significant) compared to the other concentrations. **Conclusions:** Metaphedrone in low concentrations does not affect the avoidance behaviour and reproduction of *E. fetida* and we can consider that there will be no negative effects on earthworm populations in their natural habitat exposed to 3-MMC at least up to a concentration no higher than 2500 µg/kg. Further research is needed to evaluate the effects of 3-MMC on other soil organisms such as springtails, enchytrids and mites as they are also very important bioindicators of soil health.

Keywords: psychoactive substances; metaphedrone; avoidance behaviour; reproduction; *Eisenia fetida*

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