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Swimming activity in zebrafish larvae exposed to veterinary antiparasitic pharmaceuticals

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Abstract

Veterinary antiparasitic pharmaceuticals have been detected in surface waters and several of these pharmaceuticals act on the nervous system on the target organisms implying that neurological effects also might be of concern in non-target animals such as fish. We tested if exposure to antiparasitic pharmaceuticals affect swimming activity in 6 days old zebrafish larvae. The results revealed that most pharmaceuticals did not cause any effects in swimming activity. However, larvae exposed to 0.58 mg/L doramectin displayed reduced swimming activity even though they were classified as normal, having no morphological abnormalities.

Keywords: *Danio rerio*; embryo; behavior; locomotor activity; neurotoxicity

1. Introduction

Antiparasitics are groups of pharmaceuticals that are widely used for veterinary purposes. They are administered topically, orally or injected intramuscularly and subcutaneously to animals for treatment or prevention of parasitic infections. Low levels of veterinary pharmaceuticals have been detected worldwide in soils, surface water and groundwater (Boxall et al., 2003; Łukaszewicz et al., 2017; Kim et al., 2018) which implies that the risk for organisms inhabiting such environments needs to be taken into consideration. The major route of entry from animals into the environment is by excretion via urine and/or feces either directly from grazing livestock or by the disposal of manure to

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