

Title

Chronic exposure to the antidepressant paroxetine disrupts fitness-related behaviours in fish

Abstract

The environmental levels of paroxetine (PAR), a selective serotonin reuptake inhibitor antidepressant, have risen due to increased consumption combined with the inefficiency of wastewater treatment removal. The functional conservation of important SSRI targets in vertebrates raises concerns about the potential adverse effects of exposure to pharmaceutically active molecules, such as PAR, on non-target organisms. This study addressed the effects of PAR chronic exposure (21 days) on adult zebrafish, assessing the effects of a low (40 µg/L - environmentally relevant concentration) and a high (400 µg/L – worst-case scenario) concentration in fish swimming behaviour and stress response. PAR-exposed fish displayed reduced swimming activity, stress response impairment and disruption of thigmotactic behaviour. These PAR-induced behavioural modifications may directly influence animal fitness, which, in turn, may lead to population and community disruption.

Keywords: Selective serotonin reuptake inhibitors; Zebrafish; Chronic effects; Behaviour modification; Animal fitness