



The 8th International Electronic Conference on Medicinal Chemistry (ECMC 2022)

01-30 NOVEMBER 2022 | ONLINE

Effects of paroxetine chronic exposure to fish and its role in the response to other environmental contaminants

Chaired by **DR. ALFREDO BERZAL-HERRANZ**;
Co-Chaired by **PROF. DR. MARIA EMÍLIA SOUSA**



pharmaceuticals



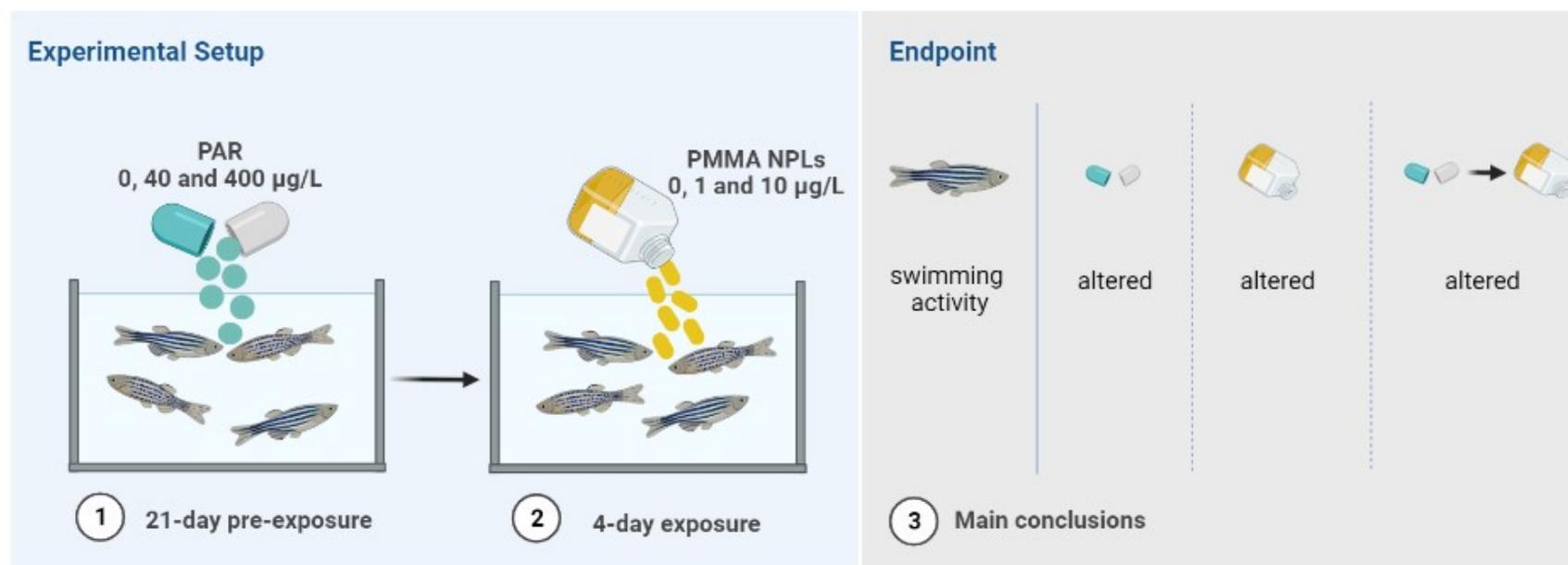
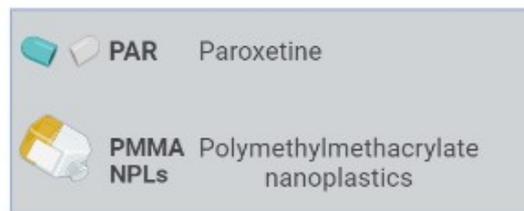
Carla Ferreira de Melo ^{1,*}, Cátia Venâncio ^{1,*}, Mónica Almeida ¹, Isabel Lopes ¹, Peter Kille ², and Miguel Oliveira ¹

¹ Centre for Marine and Environmental Studies (CESAM), Department of Biology, University of Aveiro, 3810-193, Aveiro, Portugal

² Cardiff School of Biosciences, Biosi 1, University of Cardiff, P.O. Box 915, Cardiff, CF10 3TL, UK

* Corresponding authors: csofia@ua.pt, catiavenancio@gmail.com

Effects of paroxetine chronic exposure to fish and its role in the response to other environmental contaminants



Abstract: Selective serotonin reuptake inhibitor (SSRI) antidepressants consumption has increased significantly worldwide leading to its environmental dissemination. Their frequent and increasing detection in different environmental matrices is thus an emerging environmental concern as these drugs are biologically active substances that, although designed to modulate human behaviour, have the ability to alter fish behaviour, physiology, and gene expression, even at low concentrations. The available studies with paroxetine are scarce and there is little information on how chronic exposure to SSRIs may influence the response to other environmental contaminants like nanoplastics (NPLs), which is an environmentally relevant condition as SSRIs do not exist alone in the environment. Fish locomotor behaviour confirmed to be a very sensitive endpoint to assess behavioural toxicity. Our results highlight the ability of SSRIs to modulate effects of other contaminants and the need to consider organisms' previous contamination history.

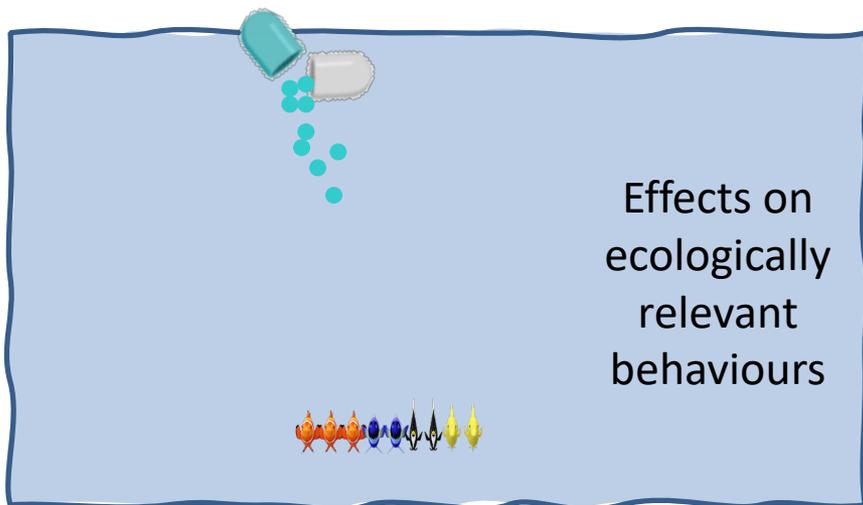
Keywords: animal fitness; antidepressants; behaviour; emergent contaminants

ECMC
2022

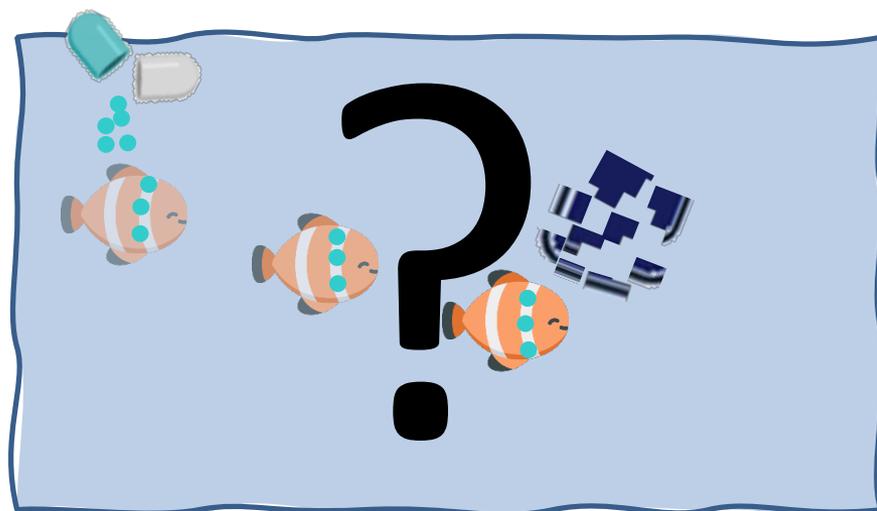
The 8th International Electronic
Conference on Medicinal Chemistry
01-30 NOVEMBER 2022 | ONLINE

Introduction | SSRIs-induced effects on fish fitness

SSRIs (e. g. Paroxetine)



Other environmental contaminants
(e. g. PMMA nanoplastics)



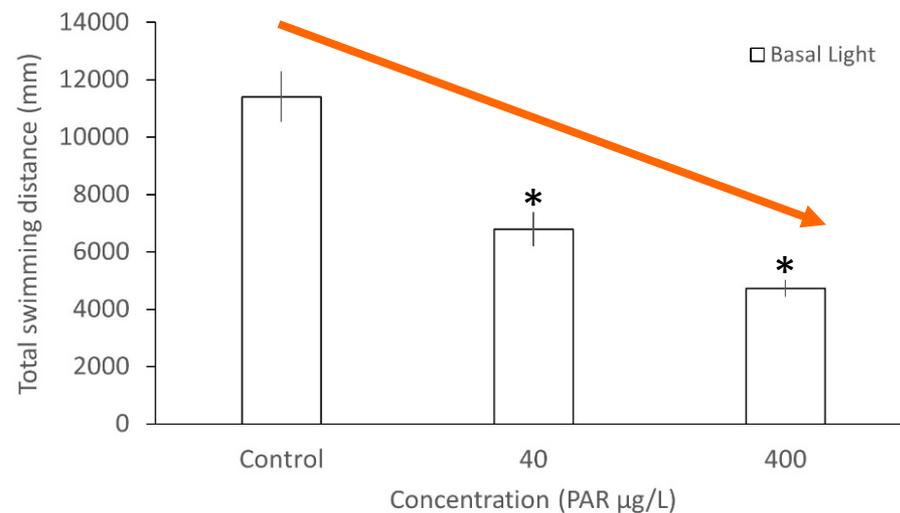
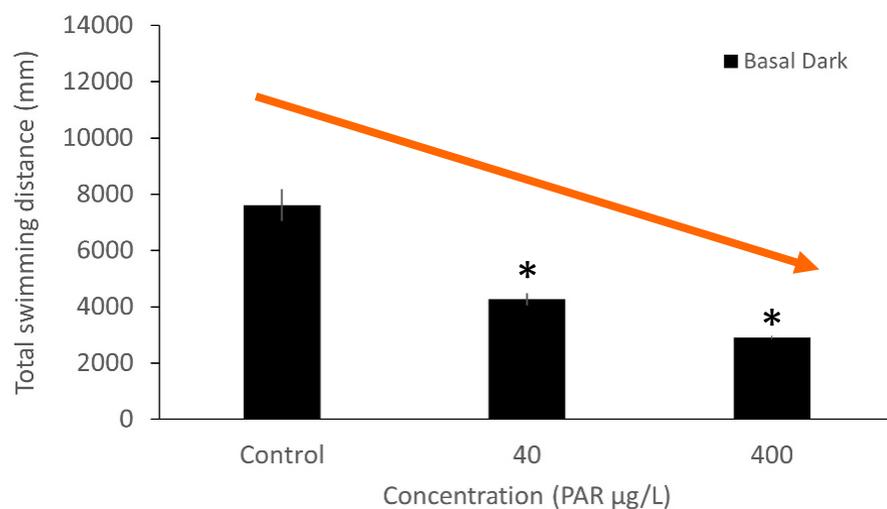
ECMC
2022

The 8th International Electronic
Conference on Medicinal Chemistry

01-30 NOVEMBER 2022 | ONLINE

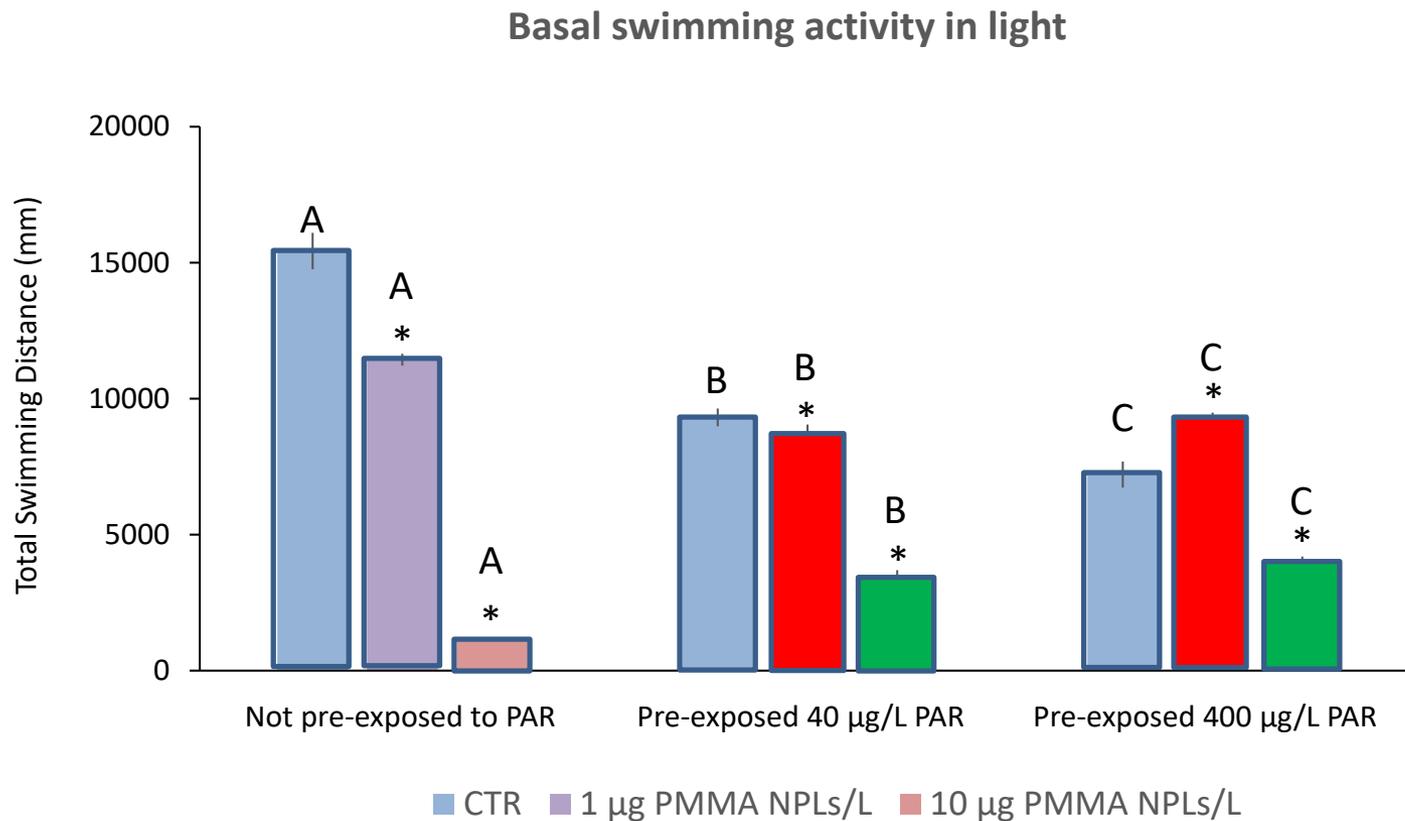
Results and discussion | PAR chronic exposure

Basal swimming activity



PAR significantly decreased fish swimming activity under dark and light conditions

Results and discussion | Pre-exposed versus Not pre-exposed fish



Conclusions

- The effects on fish swimming behaviour induced by PAR chronic exposure are not reverted after a 4-day depuration period



- Pre-exposure to PAR proved relevant in the response to additional environmental stressors like presence of other contaminants



- Additional studies are needed to explore SSRIs modulatory role on the response to the presence of other environmental stressors (e. g. abiotic conditions, chemicals and particles) and animal fitness related features (e. g. feeding, predator avoidance)



Acknowledgments

Foundation for Science and Technology (FCT)

➤ 2021.04580.BD to Carla Melo;

➤ UIDB/50017/2020+UIDP/50017/2020+LA/P/0094/2020 to CESAM.



universidade
de aveiro



ECMC
2022

The 8th International Electronic
Conference on Medicinal Chemistry

01-30 NOVEMBER 2022 | ONLINE