



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

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

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*pharmaceuticals*



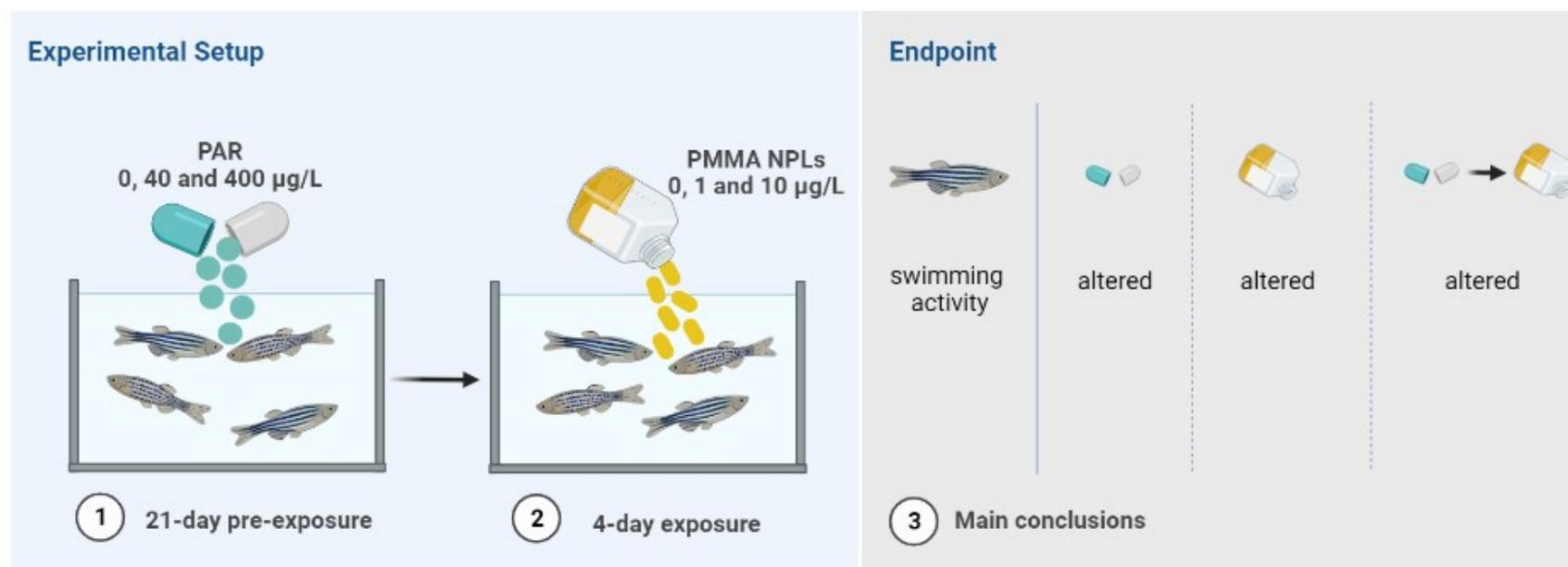
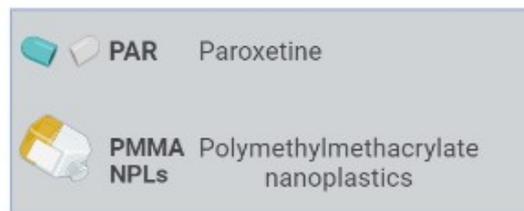
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# Effects of paroxetine chronic exposure to fish and its role in the response to other environmental contaminants



**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.

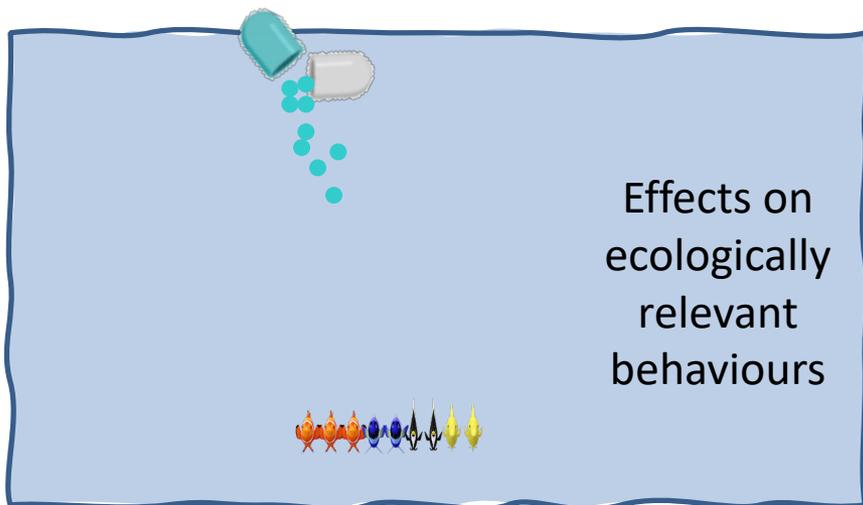
**Keywords:** animal fitness; antidepressants; behaviour; emergent contaminants

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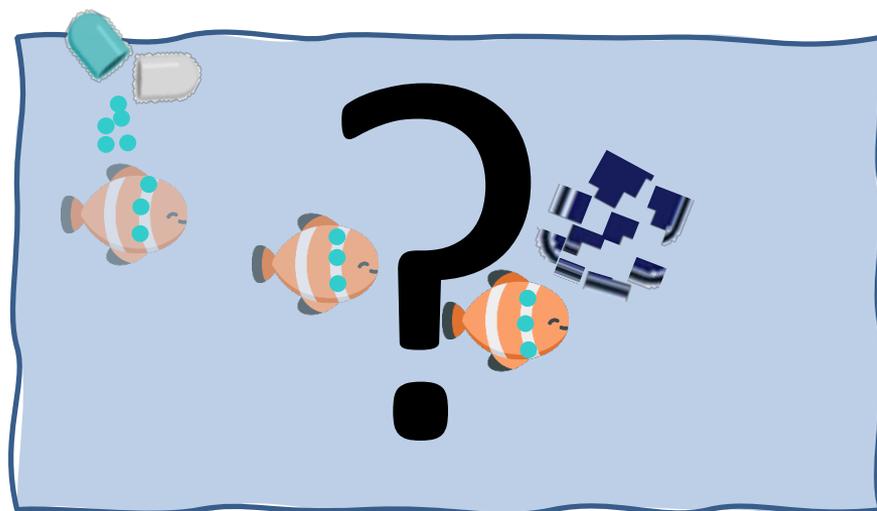
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# Introduction | SSRIs-induced effects on fish fitness

SSRIs (e. g. Paroxetine)



Other environmental contaminants  
(e. g. PMMA nanoplastics)



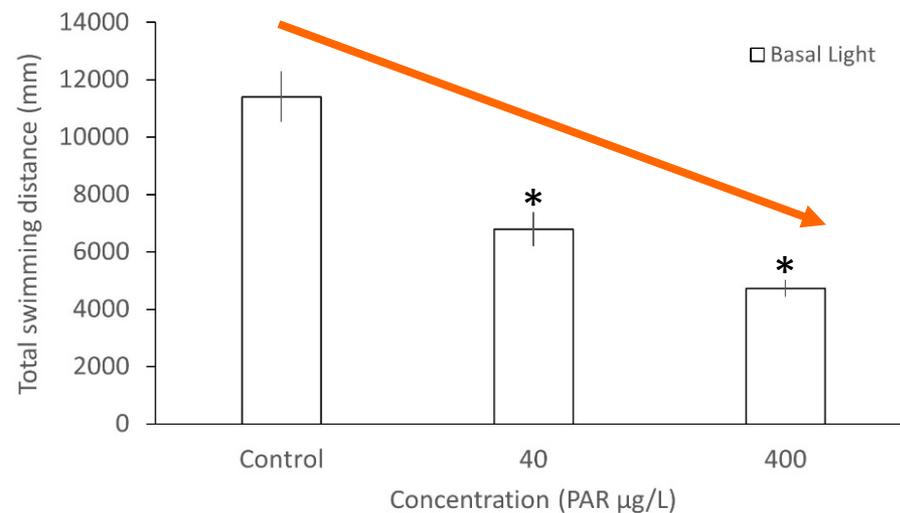
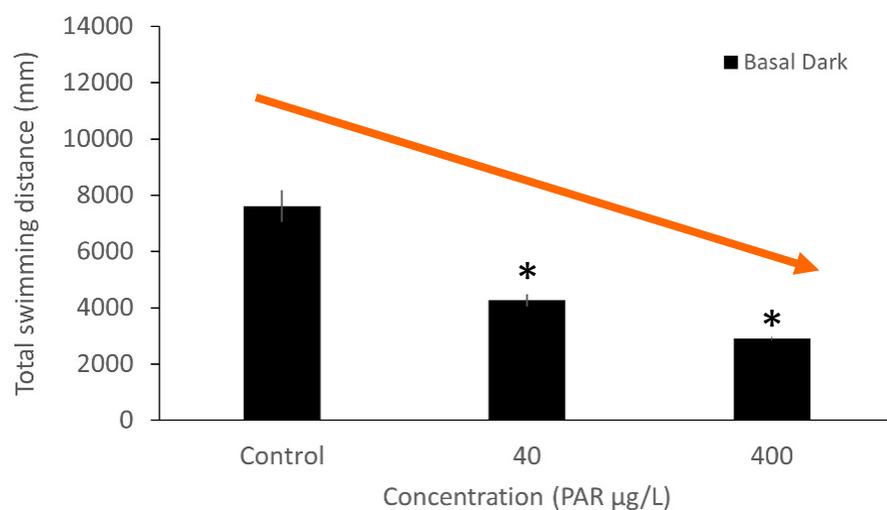
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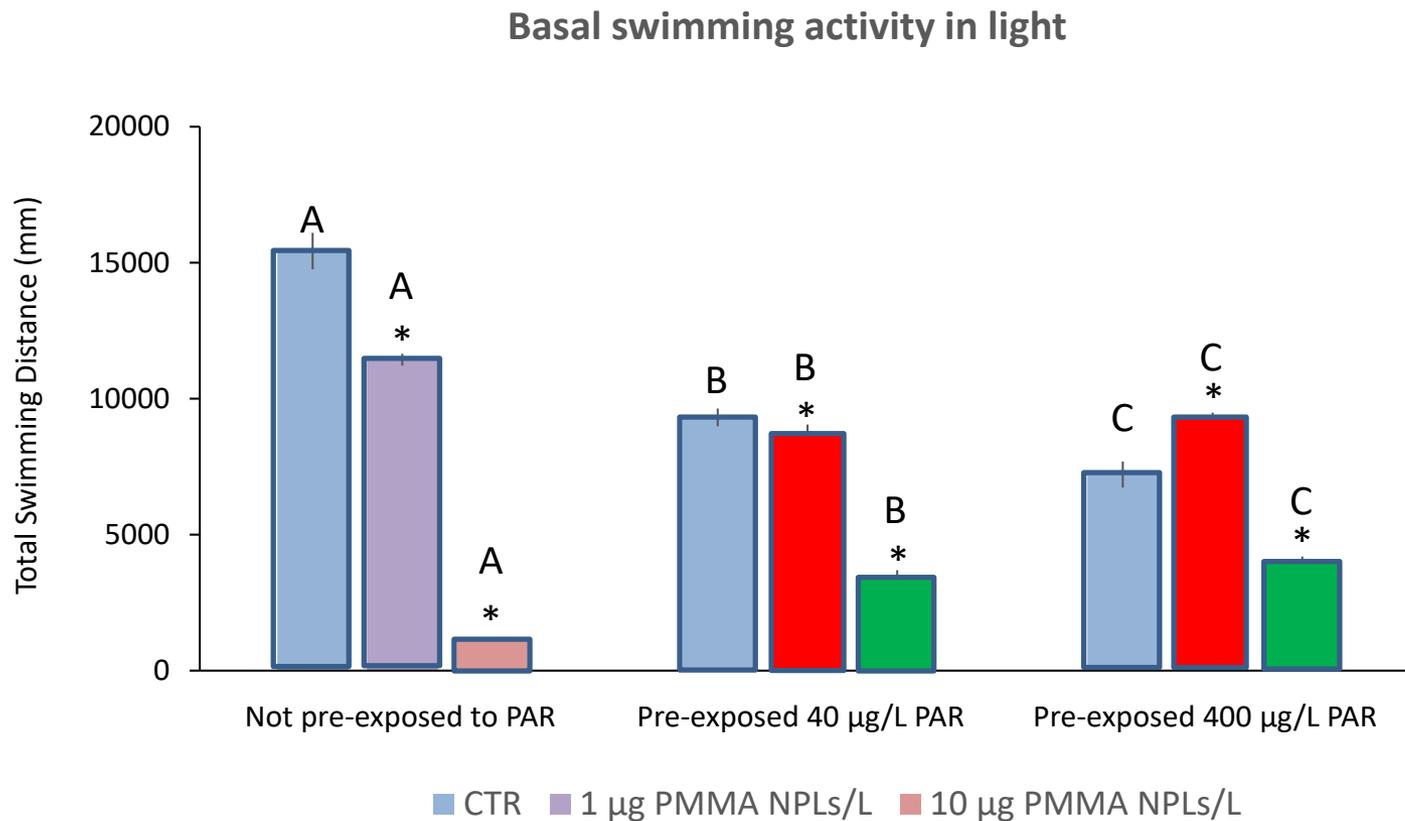
# Results and discussion | PAR chronic exposure

## 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)



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