



ALEXANDRU IOAN CU
UNIVERSITY of IASI

Preliminary study on the potential of a high dose of valproic acid to modulate aggressive and anxiety-like behaviour in a zebrafish model

Oprea Oana-Georgiana^{1*}, Balmus Ioana-Miruna^{2,3*}, Bogdan Novac⁴, Irina Gurzu⁵, Gabriel Plavan⁶, Mircea Nicusor Nicoara^{6,7}, Alin Ciobica^{3,6,8,9}, Bogdan Gurzu¹⁰, Andrei Luca¹¹

¹ Doctoral School of Biology, Faculty of Biology, Alexandru Ioan Cuza University of Iasi, B-Dul Carol I, No. 11, 700506 Iasi, Romania; ² Department of Exact Sciences and Natural Sciences, Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iasi, Carol I Avenue, 20A, 700505 Iasi, Romania; ³ CENEMED Platform for Interdisciplinary Research, "Grigore T. Popa" University of Medicine and Pharmacy, 700115 Iasi, Romania; ⁴ Faculty of Medicine, University of Medicine and Pharmacy "Grigore T. Popa", Iasi, Romania; ⁵ Faculty of Medicine, University of Medicine and Pharmacy "Grigore T. Popa", 16 Universitatii Stree 700115, Iasi, Romania; ⁶ Department of Biology, Faculty of Biology, Alexandru Ioan Cuza University of Iasi, B-Dul Carol I, No. 11, 700506 Iasi, Romania; gabriel.plavan@uaic.ro; ⁷ Doctoral School of Geosciences, Faculty of Geography and Geology, "Alexandru Ioan Cuza" University of Iasi, Iasi, Romania; ⁸ "Ioan Haulica" Institute, Apollonia University, Iasi, Romania; ⁹ Biomedical Research Group, "Olga Necrasov" Centre, Romanian Academy, Iasi Branch, Teodor Codrescu 2, 700481 Iasi, Romania; ¹⁰ Department of Morphofunctional Sciences II, Faculty of Medicine, Grigore T. Popa University of Medicine and Pharmacy, 700115 Iasi, Romania. ¹¹ Department of Preclinical Sciences, Faculty of Medicine, Titu Maiorescu University Bucharest, Romania

* Correspondence: opreageorgiana801@yahoo.ro



FACULTY of
BIOLOGY

Aim of the Study:

Valproic acid (VPA), a broad-spectrum anticonvulsant acting through enhanced GABAergic transmission and modulation of voltage-gated ion channels, disrupts the balance of GABAergic when administered to zebrafish (*Danio rerio*), resulting in elevated anxiety- and aggression-like states that closely resemble the core features of autism spectrum disorder (ASD). The study aims to describe and evaluate the effects of 700 μ M valproic acid (VPA) treatment for 7 days on aggressive and anxiety-like behaviour in a zebrafish model of ASD.

Materials and Methods:

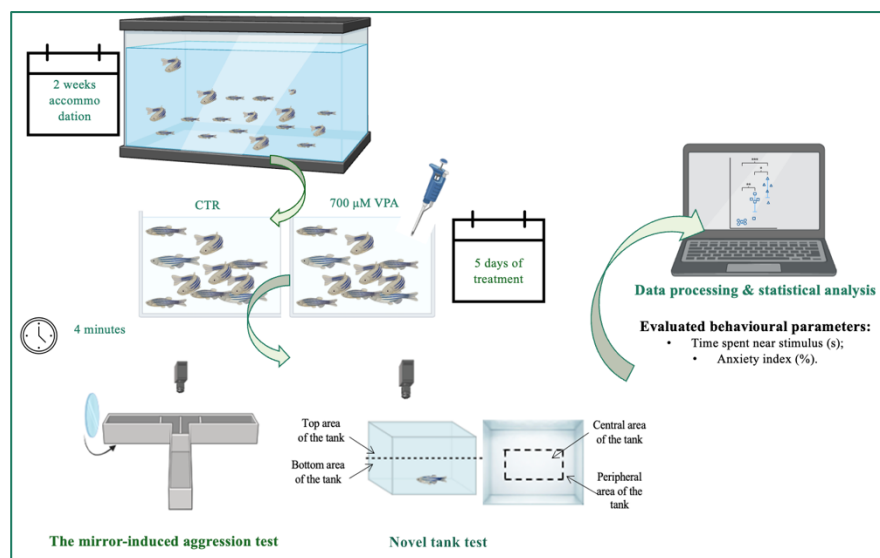
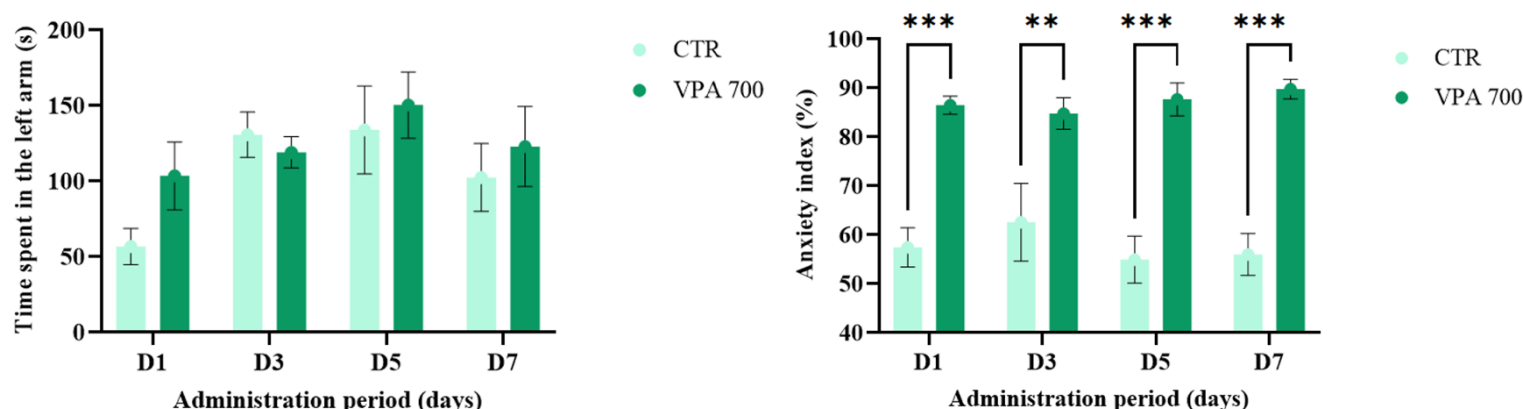


Figure 1. Experimental design

Legend: CTR – control; VPA – valproic acid

Results:



Conclusions:

The 700 μ M VPA treatment for 7 consecutive days with continuous exposure could lead to the sustained manifestation of aggressive and anxiety-like behaviours in an adult zebrafish model.

References:

Li, X.; Feng, T.; Lu, W. The effects of valproic acid neurotoxicity on aggressive behavior in zebrafish autism model. *Comparative biochemistry and physiology. Toxicology & pharmacology*, 2024). *CBP*, 275. <https://doi.org/10.1016/j.cbpc.2023.109783>