

## POSTER 144

## DNA damage in zebrafish larvae induced by exposure to MDMA – preliminary data

Ondina Ribeiro<sup>1</sup>, Isabel Gaivão<sup>2</sup>, Luís Félix<sup>1,3</sup>, Cláudia Ribeiro<sup>4,5</sup>, João Soares Carrola<sup>1,3\*</sup><sup>1</sup>Centre for the Research and Technology of Agro-Environmental and Biological Sciences (CITAB), University of Trás-os-Montes and Alto Douro (UTAD), 5000-801 Vila Real, Portugal.<sup>2</sup>CECAV and Department of Genetics and Biotechnology, UTAD, Vila Real, Portugal.<sup>3</sup>Inov4Agro—Institute for Innovation, Capacity Building and Sustainability of Agri-Food Production, UTAD, 5000-801 Vila Real, Portugal.<sup>4</sup>TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU, CRL, 4585-116 Gandra, Portugal.<sup>5</sup>Interdisciplinary Center of Marine and Environmental Research (CIIMAR), University of Porto, Edifício do Terminal de Cruzeiros do Porto de Leixões, Matosinhos, Portugal.

\*✉ joao@utad.pt

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## Resumo

**Introduction:** Psychoactive substances (PAS) consumption and abuse is an important public health concern [1]. PAS, like 3,4-methylenedioxymethamphetamine (MDMA/Ecstasy), and its metabolites are excreted via urine and reach urban wastewaters, and consequently have been recognized as emerging environmental contaminants [2]. Due to their incomplete removal in wastewater treatment plants, PAS can be found in aquatic ecosystems and can induce genotoxic effects in non-target organisms like fish [3] being a concern also during summer parties, like electronic dance Music parties [4]. The assessment of genetic damage in fish is important as it can have individual and populations consequences even at relevant environmental concentrations under chronic exposure and/or early life stages. **Objectives:** The aim of the study was to evaluate the toxic effect of MDMA in zebrafish larvae (*Danio rerio*) focusing on DNA damage. **Materials and Methods:** For this, 50 zebrafish embryos with 3 hours

post-fertilization (hpf) were distributed in 3 replicates and exposed to various concentrations of MDMA (0.02, 0.2, 2, 20 and 200 µg/L). The DNA damage was analysed in 10 zebrafish larvae at 96 hpf. For these, 2 slides (4 gels) per treatment were performed to the comet assay technique (single-cell gel electrophoresis). The slides were analysed by fluorescence microscopy and 100 aleatory comets were sorted into five classes: 0 to 4 arbitrary units (AU) to determine the genetic damage indicator (GDI) [5]. **Results:** Data showed a significant increase in genetic damage in fish exposed to the higher concentration (200 µg/L) of MDMA compared to the control. **Conclusions:** Our data evidenced that MDMA can lead to genotoxic problems for the higher concentration tested (200 µg/L). However, more studies are needed to confirm these data using zebrafish or other non-target fish species and investigate deeper the impacts of MDMA in aquatic ecosystems under chronic exposure.

**Keywords:** psychoactive substances; MDMA; DNA damage; comet assay; *Danio rerio***Acknowledgments:** This work was supported by national funds through FCT by means of the research project EnantioTox (PTDC/CTA-AMB/6686/2020) and under the project UIDB/04033/2020.

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