POSTERS

# IMPACT OF MICROPLASTICS AND BISPHENOL A, ALONE AND ABSORBED ON MPS, ON MYTILUS EDULIS EMBRYOS

**G. La Pusata[1], C. Lefebvre[2], M. Galati[1], E. Pulvirenti[3], V. Parrino[1], G.O. Conti[3], M. Ferrante[3], M. Maisano[1], J. Cachot[2], T. Cappello[1]**

*[1]Dept. of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Italy; [2]University of Bordeaux, Laboratory EPOC, UMR 5805, Pessac, France; [3]Dept. of Medical, Surgical Sciences and Advanced Technologies G.F. Ingrassia, University of Catania, Italy*

Plastic accumulation represents an environmental concern affecting all living organisms. Microplastics (MPs) pose risks due to their small size and high potential interaction with biological systems. Similarly, bisphenol A (BPA), a common plastic additive, constitutes an additional threat arising from plastic production. Therefore, this work aimed to evaluate the effects of these contaminants, using Mytilus edulis embryos as model, following exposure for 48 h to 10 µg/mL polystyrene MPs (1 µm; 5 µm) and BPA (5 µM; 25 µM), both alone and absorbed on MPs (BPA-MPs). Morphological and metabolomic analyses were performed on D-larvae, along with chemical assessments to detect potential MPs accumulation. Chemical analyses indicated that MPs alone were not internalized during the first 48 h, while they were detected in BPA-MPs exposure. Morphological results showed that individual exposure to contaminants caused growth arrest, shell malformations and general impair of larval development. Interestingly, BPA-MPs exposure partially reduced toxicity compared with single treatments. Metabolomic analyses based on proton nuclear magnetic resonance (1H NMR) revealed disruptions in nucleotide turnover, neurotransmission, energy and amino acid metabolism, indicating significant cellular stress and metabolic reorganization. Overall, these findings reveal the absence of synergistic/additive effects in the interaction between MPs and BPA, potentially related to BPA adsorption on MPs surfaces, highlighting the sensibility of early developmental stages of a relevant ecological species like Atlantic bivalve M. edulis to a common environmental condition.

Acknowledgments: This work was supported by PRIN 2020 (Prot. 20204YRYS5_003): “Impact of microplastics and associated contaminants on reproduction and development: A comparative and multidisciplinary study on mechanisms of action and protective strategies”.