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ABSTRACT BOOK

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In the marine environment, microplastic (MPs) pollution represents an emerging problem on a global scale (Koelmans *et al.*, 2019). MPs are synthetic polymeric fragments with a diameter <5 mm, diffused in all seas both horizontally by currents and throughout the water column by gravity (Rochman, 2015; Ziccardi *et al.*, 2016). Thus, all aquatic organisms are exposed to MPs of different types and sizes, usually conjugated with various additives recognized as toxic, carcinogenic, and teratogenic (Chen *et al.*, 2018). Indeed, many studies have already shown toxic effects on reproductive system of different animal models, highlighting the ability of MPs to accumulate in gonads, stimulating inflammation and oxidative stress (Brandts et al, 2018). In addition to the damages due to the ingestion of plastic waste and the bioaccumulation by adult marine biota, micro- and nanoplastics could also affect gametes that are released in water by organisms with external fertilization. Of all types of MPs, styrene polymers are the most frequently encountered in coastal surface and aquatic habitats worldwide. For this reason, the aim of the present study was to investigate the effects of amine-modified polystyrene particles (0.1 µm) on sperm parameters of *Mytilus galloprovincialis*. Following an acute exposure (30 min) to increasing concentrations of polystyrene (1 µg/ml, 10 µg/ml, 20 µg/ml), different parameters were evaluated: motility, viability and DNA fragmentation. The data obtained show that these parameters undergo an exponential worsening compared to the control group, at the increasing concentration tested ($p < 0.05$ and $p < 0.01$). The findings highlight the negative impact which plastic pollution could have on sperm quality and reproductive potential of organisms, altering the equilibrium of aquatic ecosystems.

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EFFECTS OF ACUSTIC STRESS ON BIOCHEMICAL AND MOBILITY PARAMETERS AND BEHAVIOUR IN THE CRAYFISH, *CHERAX DESTRUCTOR*

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This study examined the effects of acoustic stress on behaviour and biochemical parameters on freshwater crayfish, *Cherax destructor* (yabby). The experiment was conducted in a tank equipped with an audio and video recording system using ten groups (five control and five test) of three adult shrimps (30 yabbies in total). The animals in the test group were exposed to acoustic signals [a linear sweep ranging from 10 to 200 kHz and lasting 1 s, with a sound pressure level between 138 and 157 dBrms (re 1lParms)] for 45 minutes. The following behavioral event and status were considered: velocity of movement, distance moved, angular velocity, tail flip, sounds emissions, encounters, fights and duration of the fights. Osmolarity, pH, protein concentration and enzyme activities (alkaline phosphatase, esterase and peroxidase) of hemolymph were measured. Animal exposed to acoustic stress showed higher motility and aggressivity with a significant changes in velocity of movement, angular velocity and distance of movement, sounds emissions and duration of the fights. Enzyme activities also show significant changes, with significantly lower values in stressed animals (alkaline phosphatase: TEST 0,014±0,014U/µg CONTROL 0,045±0,016U/µg; esterase: TEST 0,009±0,01U/µg CONTROL 0,037±0,016U/µg; peroxidase: TEST 5,1±3U/µg CONTROL 8,3±2,8U/µg). Our results suggest that acoustic stress can have both behavioural and physiological effects on the species.

PLASTISPHERE: THE IMPACT OF PLASTICS FROM NEW PERSPECTIVE

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Plastic represents the most abundant class of litter in the Oceans [Canals et al 2021; Pham *et al.* 2014; Worm *et al.* 2017] and its presence has been recognized globally [Bergmann *et al.* 2015; Cau *et al.* 2018; Chiba *et al.* 2018; Suaria *et al.* 2016]. Its impact on marine ecosystems is currently considered a hot topic for both scientific community and political sphere. Plastics, like any other artificial and hydrophobic surface, can be exploited and colonised quite rapidly by a wide range of organisms which, over time, can give rise to real biocenoses [Wright *et al.* 2020; Wright *et al.* 2021]. This aspect, for which the term 'plastisphere' has recently been coined, deserves attention as plastic debris on seabed tends to increase structural complexity of habitats, which paradoxically favours a local biodiversity increase [Song *et al.* 2021]. During sampling carried out within the MEDITS project, in October 2021, plastic substrates were collected by fishtrawl for approximately 3 km of coast in Calabria (start point: Latitude 39°12.576′ N, Longitude 16°2.175′ E; end point: Latitude 39°14.18′ N, Longitude 16°2.126′ E) at a depth range between 84 and 87 m. This area is included in GSA 10 (Central-Southern Tyrrhenian Sea). Using a stereomicroscope, several classes of organisms were identified at the lowest possible taxonomic level; these included 45% Anellida Polychaeta, 40% Bivalve Molluscs, 10% Cnidaria and 5% Ascidiacea. The results of present research can contribute to widening of currently limited knowledge about the role of plastic as a possible artificial substrate for benthic organisms. This aspect could be of particular interest in order to clarify and evaluate possible positive, negative or no effects generated by accumulation of plastic waste on seabed and in particular on biodiversity.

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