MICROFIBERS HIDING MACROPROBLEMS: HOWS IS YOUR CLOTHING WASHING CONTRIBUTING TO ANTIBIOTICS TOXICITY?

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The global production and consumption of textile fibers has gradually increased over the decades, with synthetic fibers standing out among them. Washing fabrics made from these fibers can cause their release and subsequent contamination of water bodies as marine environments. Furthermore, up to the outfall in the oceans, these fibers can adsorb other contaminants present in effluents, such as antibiotics, including amoxicillin, which has been widely applied in human and veterinary use and which can pose a risk to marine and estuarine organisms. Therefore, the aim of the present study was to evaluate the adverse effects of exposure to polyester microfibers associated with amoxicillin in the hemolymph of oysters *Crassostrea brasiliana*. For this purpose, polyester fabrics were washed in a washing machine, the effluent was filtered and the fibers were obtained and their composition was confirmed by Fourier Transform Infrared Spectroscopy (FT-IR). Specimens of *C. brasiliana* were exposed to the following treatments: control (C); with polyester microfibers alone (PES), amoxicillin alone in effluent and marine environment concentrations (AMX and AM AMB) and polyester microfibers fortified with amoxicillin (PAMX) over 28 days. Hemolymph samples were collected at 2, 7, 14, 21 and 28 days and the Neutral Red Dye Retention Time (NRRT) assay was performed to assess cellular health. Data were analyzed using permutational analysis of variance (PERMANOVA). The results demonstrated interaction between the factors microfibers, amoxicillin and exposure time, with a significant increase in dye retention time in the AMX treatment in prolonged exposure (28 d), while for the PAMX treatment, a significant reduction was observed in this same period. Furthermore, a significant reduction was observed between the treatment containing only the polyester fiber and the treatment with the fiber containing adsorbed amoxicillin. The present study demonstrates that the association of synthetic fibers and antibiotics can compromise the health of these organisms, affecting not only the transport of nutrients and oxygen, but also the immune and defense systems in these organisms, which have great ecological and economic relevance.

Key-words: Syntethic fiber; pharmaceutical; carrier effect; bivalve.

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