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“Environmental risk assessment of illicit drugs in marine environments”



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In light of the high consumption of cocaine and by-products in metropolitan coastal regions, their occurrence in seawater and the potential toxicity for aquatic organisms, our project aimed to assess effects on different life stages of marine mussels. For this purpose, mussels' gametes, embryos and adults were exposed to crack cocaine and different endpoints were employed (fertilization rate, embryo-larval development, lysosomal membrane stability, DNA strand breaks and cholinesterase activity). Embryonary and cytotoxic effects were evidenced in mussels exposed to crack cocaine concentrations ranging from $\mu\text{g}\cdot\text{L}^{-1}$ to $\text{mg}\cdot\text{L}^{-1}$. Our studies report the first data on biological effects of illicit drugs to non-target marine organisms and should encourage further ecotoxicological studies to assess bioaccumulation and chronic toxicity of these contaminants of emerging concern in coastal ecosystems.