Research program IZS VE 10/16

Interaction between nanoparticles and pollutants in the marine environment: methodological assessment to evaluate consumers' exposure trough marine food web

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Recent studies have proven that nanoparticles (NPs) may modify the bioavailability and the bioaccumulation of pollutants in marine environment. This might pose new threat to environment as well as to human health through the trophic transfer within the marine food web.

The current research project aims at studying the likely interaction between widely used NPs and persistent organic pollutants (POPs) in an artificial marine environment and how their co-presence may affect each other bioavailability and bioaccumulation to aquatic sentinel edible specie: Mediterranean mussel (Mytilus galloprovincialis). The first proposal is to include titanium dioxide (TiO2) NPs and six indicators non-dioxin-like polychlorinated biphenyl (ndlPCBs). Afterwards, a feasibility study will be carried out in order to extend the investigation to nanoplastics (e.g. polystyrene NPs) an emerging but still unexplored class of contaminants largely diffused in the marine environment and potentially carrier of pollutants in seafood.

The research will contribute to the assessment of the impact of NPs on the environment accounting for the novel and unique properties of NPs to interact with anthropogenic factors and ultimately to assess the potential human exposure scenario through the food chain.