

Diversity and degrading capacity of viable bacteria from plastic debris collected along the coast of the Ionian and Tyrrhenian Sea

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Recognized as one of the most alarming sources of pollution, plastic debris are widespread and persistent into marine water and oceans (¹). Behind the serious physical and toxicological damages, they could cause to the living organisms, they could also offer a suitable surface for microbial colonization (²). Indeed, their long half-life and hydrophobic feature allow the attachment and proliferation of several different kind of microbial communities, including heterotrophs, autotrophs and pathogens. Such communities are recognized as “plastisphere” (³). This research aims at describing and characterizing the cultivable microbial communities associated to floating plastic debris. Samples of microplastics were collected by manta net in the areas of Vibo Valentia and Capo Rizzuto along the coast of the Ionian and Tyrrhenian Sea (Calabria) and used to isolate attached bacteria. The isolated strains were screened for hydrocarbon degradation and polyethylene powder degradation capacity. The strains were taxonomically identified by Sanger sequencing of the 16S rDNA gene. A total of 144 strains were obtained by microplastic fragments, of which 79 derived from the area of Capo Rizzuto and 55 from the area of Vibo Valentia. Most of the strains were affiliated to the genera *Pseudoalteromonas*, followed by *Vibrio* and *Enterobacter*. Overall, the strains showed interesting degradation abilities in terms of plastic degradation. This work contributes to our knowledge about the underexplored plastisphere.

References:

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