Message in the water column: Mediterranean sponges under scrutiny

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Abstract

Sponges (Porifera) represent a high substrate cover in some marine ecosystems like Mediterranean coralligenous assemblages or the Caribbean Sea. As sessile filter feeders, sponge species have evolved an arsenal of chemical defence to thrive in this highly competitive environment with high concentrations of microbes and a constant struggle for space. While contact interactions have usually been involved in the communication with these key marine invertebrates, less attention has been paid to the distance communication despite outstanding filtration capacities. Metabolites released by sponges in the water column has usually been underestimated mainly because of technical issues related to a quick dilution factor and complex capture of the targeted molecules. After inspection of the state of the art in this field we will present our recent findings on the specialized metabolism of Mediterranean sponges. We will first describe the chemical diversity of the encrusting sponge *Crambe crambe* and its bioactive guanidine alkaloids named crambescins and crambescidins. We will then assess the presence of these compounds in the close environment of the sponge and extend this approach to other common Mediterranean sponges. Some preliminary results on the study of the distance interaction between marine cave-dwelling sponges and crustaceans will then be presented. These findings could pave the way for new key molecular data in marine ecology but also to produce important sponge metabolites.

Keywords: Porifera, marine communication

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