Chemical Defense and Antifouling Activity of Three Mediterranean Sponges of the Genus *Ircinia*

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The defense roles and the antifouling activity of the organic extracts and the major metabolites of the sponges *Ircinia oros, I. variabilis* and *I. spinosula* were investigated. The antifeedant activity was tested in experimental aquaria on the generalist predator fish *Thalassoma pavo* as well as in coastal ecosystems rich in fishes. Some of the major metabolites exhibited high levels of antifeedant activity. The antifouling activity was tested in laboratory assays, against representatives of the major groups of fouling organisms (marine bacteria, marine fungi, diatoms, macroalgae and mussels). All extracts showed promising levels of activity. As was expected, no single extract was active in all tests and some fractions that were effective against one organism showed little or no activity against the others. The high but variable level of antifouling activity in combination with the absence of toxicity (tested on the development of oyster and sea urchin larvae) shows the potential of these metabolites to become ingredients in environmentally friendly antifouling preparations.