

Dynamic chemical defense reactions of algae: mechanisms and function

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The extraction-approach of natural product chemistry has resulted in the elucidation of numerous defense metabolites from algae but this does not reflect the entire defensive potential of these organisms. Of special interest is the chemical defense of unicellular algae in the dilute pelagic environment and its impact on the community structure in the open ocean. Combining the direct analysis of plankton samples - thereby defining a metabolome of the entire phytoplankton community - with the development of ecological tools to monitor defensive reactions will allow to identify new ecosystem-shaping roles of infochemicals in this environment. In addition, tools to monitor defensive genes will be used and directly applied in the field. The unprecedented induced and wound activated defense mechanisms of macroalgae will be another central topic. Key questions are i) how can chemical defense be targeted efficiently in the plankton, ii) how does chemical defense and chemical communication influence plankton community structures, iii) how are chemical defense reactions in algae hormonally regulated, iv) what are the processes involved in wound sealing of siphonous macroalgae, and v) how can these mechanisms be exploited to develop new biopolymers?

Projektbeteiligte

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