Laboratory production of marine natural products

Renato C. Pereira

Instituto de Biologia, UFF

Marine organisms are potential sources of high biotechnological interest due to production of a great diversity of natural products exhibiting a broad spectrum of biological activities. But there is an urgent need for management options for a sustainable approach to the use of marine organisms as a source of bioactive compounds. The aim of this presentation is to discuss the bioprospection for bioactive marine natural products as pharmaceuticals and antifouling agents, encompassing their potential, possible obstacles and alternatives. In the red seaweed *L. dendroidea* were detected different genes involved in the biosynthesis of terpenoid precursors, and different genes coding for terpene synthases that are responsible for the chemical modifications of the terpenoid precursors, resulting in a high diversity of carbon chemical skeletons. In addition, it was demonstrate through molecular and cytochemical approaches the occurrence of the mevalonate pathway involved in the biosynthesis of terpenes. For the complete development of pharmaceuticals and antifouling compounds, marine bioprospection should be more comprehensive, associating the search for molecules with analysis of their supply. The studies with *L. dendroide* are the first on terpene synthase gene discovery in seaweeds, enabling further studies on possible heterologous biosynthesis of terpenes from exhibiting ecological or biotechnological interest. Using this approach, it is possible to promote sustainable development and conservation of biodiversity, as well as the economic development of Brazil.