



Biosynthesis of Roussoellatide from the Marine-Derived Fungus *Roussoella* sp.

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Abstract: During our program for the discovery of new bioactive and structurally unique metabolites from fungi obtained at various environments, roussoellatide, a novel bis-chlorinated polyketide has been isolated from cultures of the marine-derived fungus *Roussoella* sp. DLM33. The structure and absolute configuration of roussoellatide have been established by analysis of spectroscopic data and X-ray diffraction analysis. The use of experimental design under different growth conditions, followed by chemometric analysis allowed us to establish the optimal growth conditions for producing roussoellatide by *Roussoella* sp., in order to investigate its biosynthesis. The intriguing polyketide skeleton of roussoellatide had its biosynthesis investigated by feeding experiments with [1-¹³C]acetate, [1,2-¹³C]acetate, and [methyl-¹³C]methionine. The results indicated the involvement of Favorskii rearrangements, as well as of an intermolecular Diels-Alder reaction, leading to the unique structure of roussoellatide.

Acknowledgments: To FAPESP (2013/50228-8) and CAPES (ou CNPq) for the financial support.
