Oxidative cyclization of prodigiosin by an alkylglycerol monooxygenase-like enzyme

Prodiginines, which are tripyrrole alkaloids displaying a wide array of bioactivities, occur as linear and cyclic congeners. Identification of an unclustered biosynthetic gene led to the discovery of the enzyme responsible for catalyzing the regiospecific C–H activation and cyclization of prodigiosin to cycloprodigiosin in Pseudoalteromonas rubra. This enzyme is related to alkylglycerol monooxygenase and unrelated to RedG, the Rieske oxygenase that produces cyclized prodiginines in Streptomyces, implying convergent evolution.

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