

A one-pot chemoenzymatic synthesis for the universal precursor of antidiabetes and antiviral bis-indolylquinones.

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Abstract

Bis-indolylquinones represent a class of fungal natural products that display antiretroviral, antidiabetes, or cytotoxic bioactivities. Recent advances in *Aspergillus* genomic mining efforts have led to the discovery of the tdiA-E-gene cluster, which is the first genetic locus dedicated to bis-indolylquinone biosynthesis. We have now genetically and biochemically characterized the enzymes TdiA (bis-indolylquinone synthetase) and TdiD (L-tryptophan:phenylpyruvate aminotransferase), which, together, confer biosynthetic abilities for didemethylasterriquinone D to *Aspergillus nidulans*. This compound is the universal intermediate for all bis-indolylquinones. In this biochemical study of a bis-indolylquinone synthetase and a fungal natural product transaminase, we present a one-pot chemoenzymatic protocol to generate didemethylasterriquinone D in vitro. As TdiA resembles a nonribosomal peptide synthetase, yet catalyzes carbon-carbon-bond formation, we discuss the implications for peptide synthetase chemistry.

Beteiligte Forschungseinheiten

[Pharmazeutische Mikrobiologie](#) [Dirk Hoffmeister](#) [Mehr erfahren](#)

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