Biosynthesis of the respiratory toxin bongkrekic acid in the pathogenic bacterium Burkholderia gladioli.

Moebius N, Ross C, Scherlach K, Rohm B, Roth M, Hertweck C (2012) *Biosynthesis of the respiratory toxin bongkrekic acid in the pathogenic bacterium Burkholderia gladioli. Chem Biol* 19(9), 1164-1174.

Details

PubMed

OPEN ACCESS

PAPER

Abstract

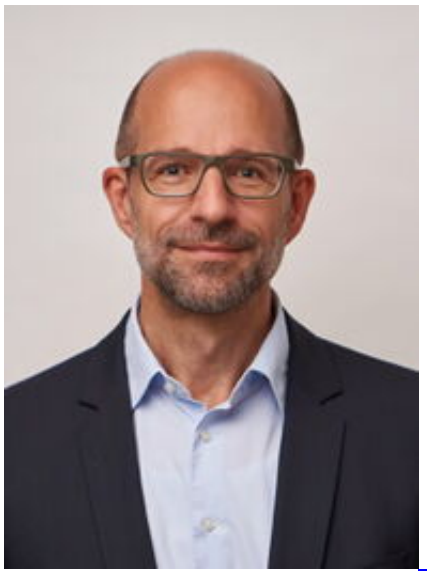
Bongkrekic acid (BA), an infamous respiratory toxin of the pathogenic bacterium Burkholderia gladioli, causes lethal intoxications when tempe bongkrek is produced with contaminated Rhizopus oligosporus cultures. Genome sequencing of B. gladioli pathovar cocovenenans unveiled the genetic basis for BA biosynthesis, and pointed to a homologous bon gene cluster in a B. gladioli strain from an infected rice plant. For functional genetics in B. gladioli λ Red recombination was established. Dissection of the modular type I polyketide synthase (a trans-AT PKS) provided insights into complex polyketide assembly. Isoprenoid-like β-branching events and a six-electron oxidation of a methyl group to a carboxylic acid give rise to the unique branched tricarboxylic fatty acid. The role of the cytochrome P450 monooxygenase, BonL, was proven by structural elucidation of deoxybongkrekic acid from a mutant.

Beteiligte Forschungseinheiten

Biomolekulare Chemie Christian Hertweck Mehr erfahren

Biotechnikum Miriam Agler-Rosenbaum Mehr erfahren

Leibniz-HKI-Autor*innen



Christian Hertweck

Details



Martin Roth

Details



Kirstin Scherlach

Details

Identifier

doi: 10.1016/j.chembiol.2012.07.022

PMID: 22999884