

Bacaryolanes A-C, Rare Bacterial Caryolanes from a Mangrove Endophyte.

Ding L, Goerls H, Dornblut K, Lin W, Maier A, Fiebig HH, Hertweck C (2015) Bacaryolanes A-C, Rare Bacterial Caryolanes from a Mangrove Endophyte. *J Nat Prod* , [PubMed](#)

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Abstract

Caryolanes are known as typical plant-derived sesquiterpenes. Here we describe the isolation and full structure elucidation of three caryolanes, bacaryolane A-C (1-3), that are produced by a bacterial endophyte (*Streptomyces* sp. JMRC:ST027706) of the mangrove plant *Bruguiera gymnorhiza*. By 2D NMR, analysis of the first X-ray crystallographic data of a caryolane (bacaryolane C), CD spectroscopy, and comparison with data for plant-derived caryolanes, we rigorously established the absolute configuration of the bacaryolanes and related compounds from bacteria. Bacterial caryolanes appear as the mirror images of typical plant caryolanes. Apparently plant and bacteria harbor stereodivergent biosynthetic pathways, which may be used as metabolic signatures. The discovery of plant-like volatile terpenes in endophytes not only is an important addition to the bacterial terpenome but may also point to complex molecular interactions in the plant-microbe association.

Identifier

PMID: 26611524