Discovery of an Extended Austinoid Biosynthetic Pathway in *Aspergillus calidoustus*.

Valiante V, Mattern DJ, Schüffler A, Horn F, Walther G, Scherlach K, Petzke L, Dickhaut J, Guthke R, Hertweck C, Nett M, Thines E, Brakhage AA (2017) Discovery of an Extended Austinoid Biosynthetic Pathway in *Aspergillus calidoustus*. *ACS Chem Biol* 12(5), 1227-1234.

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Abstract

Filamentous fungi produce a wide range of natural products that are commonly used in various industrial contexts (e.g., pharmaceuticals and insecticides). Meroterpenoids are natural products of interest because of their various biological activities. Among the meroterpenoids, there is a group of insecticidal compounds known as the austinoids. These compounds have also been studied because of their intriguing spiro-lactone ring formation along with various modifications. Here, we present an extension of the original austinol/dehydroaustinol biosynthesis pathway from *Aspergillus nidulans* in the recently identified filamentous fungus *Aspergillus calidoustus*. Besides the discovery and elucidation of further derivatives, genome mining led to the discovery of new putative biosynthetic genes. The genes involved in the biosynthesis of later austinoid products were characterized, and among them was a second polyketide synthase gene in the A. calidoustus cluster that was unusual because it was a noninterative polyketide synthase producing a diketide. This diketide product was then loaded onto the austinoid backbone, resulting in a new insecticidal

derivative, calidodehydroaustin.

Beteiligte Forschungseinheiten

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Molekulare und Angewandte Mikrobiologie Axel Brakhage Mehr erfahren

Microbiome Dynamics Gianni Panagiotou Mehr erfahren

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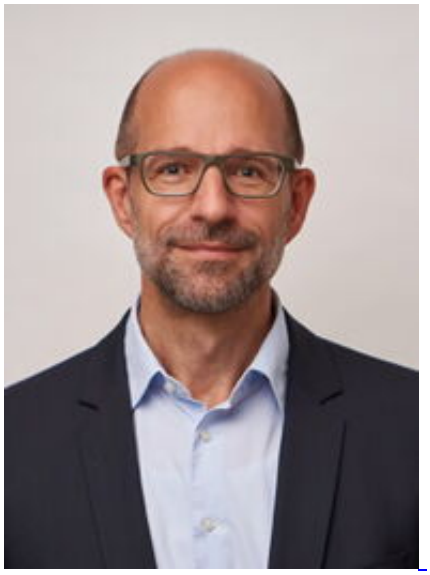
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