

Injury-induced biosynthesis of methyl-branched polyene pigments in a white-rotting basidiomycete

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Abstract

A stereaceous basidiomycete was investigated with regard to its capacity to produce yellow pigments after physical injury of the mycelium. Two pigments were isolated from mycelial extracts, and their structures were elucidated by ESIMS and one- and two-dimensional NMR methods. The structures were identified as the previously undescribed polyenes (3Z,5E,7E,9E,11E,13Z,15E,17E)-18-methyl-19-oxoicosa-3,5,7,9,11,13,15,17-octaenoic acid (1) and (3E,5Z,7E,9E,11E,13E,15Z,17E,19E)-20-methyl-21-oxodocosa-3,5,7,9,11,13,15,17,19-nonaenoic acid (2). Stable-isotope feeding with [1-(¹³C)]acetate and l-[methyl-(¹³C)]methionine demonstrated a polyketide backbone and that the introduction of the sole methyl branch is most likely S-adenosyl-l-methionine-dependent. Dose-dependent inhibition of *Drosophila melanogaster* larval development was observed with both polyenes in concentrations between 12.5 and 100 μM. GI50 values for 1 and 2 against HUVEC (K-562 cells) were 71.6 and 17.4 μM (15.4 and 1.1 μM), respectively, whereas CC50 values for HeLa cells were virtually identical (44.1 and 45.1 μM).

Beteiligte Forschungseinheiten

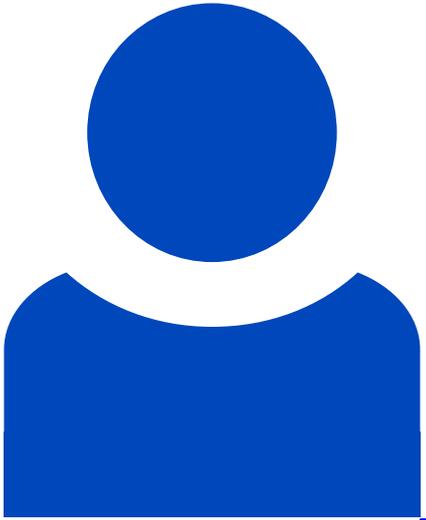
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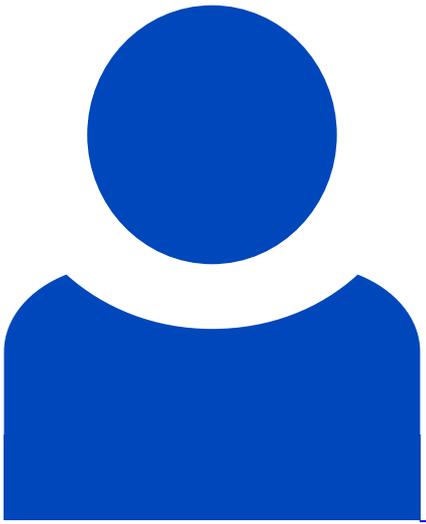
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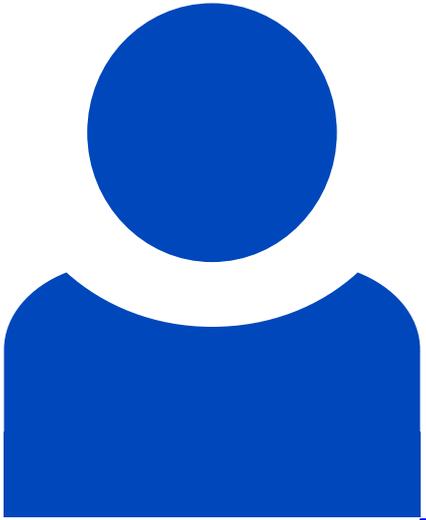
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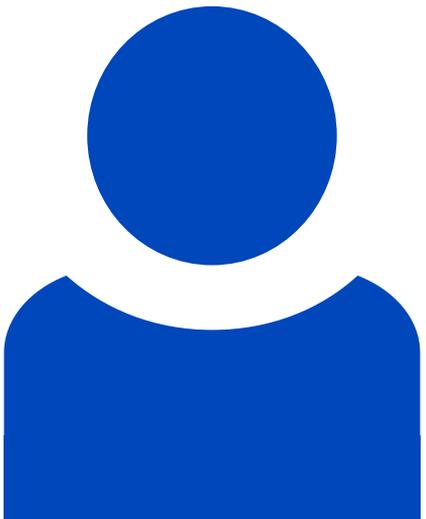
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