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Partida-Martinez LP, de Looss CF, Ishida K, Ishida M, Roth M, Buder K, Hertweck C (2007) Rhizonin, the first mycotoxin isolated from the zygomycota, is not a fungal metabolite but is produced by bacterial endosymbionts. *Appl Environ Microbiol* 73(3), 793-797.

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Abstract

Rhizonin is a hepatotoxic cyclopeptide isolated from cultures of a fungal Rhizopus microsporus strain that grew on moldy ground nuts in Mozambique. Reinvestigation of this fungal strain by a series of experiments unequivocally revealed that this "first mycotoxin from lower fungi" is actually not produced by the fungus. PCR experiments and phylogenetic studies based on 16S rRNA gene sequences revealed that the fungus is associated with bacteria belonging to the genus Burkholderia. By transmission electron microscopy, the bacteria were localized within the fungal cytosol. Toxin production and the presence of the endosymbionts were correlated by curing the fungus with an antibiotic, yielding a nonproducing, symbiont-free phenotype. The final evidence for a bacterial biogenesis of the toxin was obtained by the successful fermentation of the

endosymbiotic bacteria in pure culture and isolation of rhizonin A from the broth. This finding is of particular interest since Rhizopus microsporus and related Rhizopus species are frequently used in food preparations such as tempeh and sufu.

Beteiligte Forschungseinheiten

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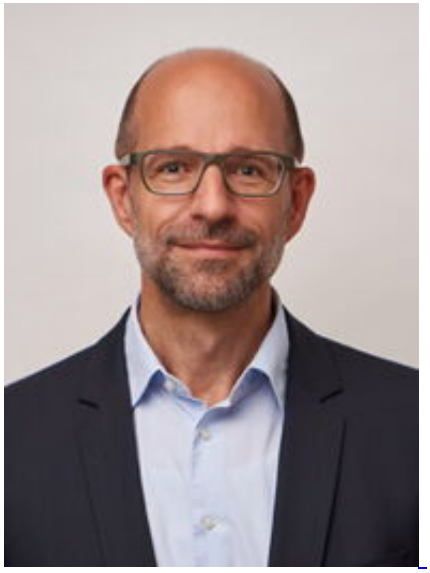

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