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Enantioselective dihydroxylation of xanthorrhizol from Curcuma xanthorrhiza via biotransformation using Aspergillus Niger

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Abstract
Biotransformation is acknowledged as one of the green chemistry methods to synthesis various analogues for further valorization of natural product compounds chemistry and bioactivities. It has huge advantage over chemical synthesis due to its cost-efficiency and higher selectivity. In this work, a xanthorrhizol derivatives, namely (7 R,10S)-10,11-dihydro-10,11-dihydroxyxanthorrhizol was produced in 60% yield from the biotransformation process utilizing A. niger. The structure of the compound was established by extensive spectroscopic methods and comparison with literature data. This biotransformation successfully afforded enantioselective dihydroxylation reaction via green chemistry route. This is the first report on both biotransformation of xanthorrhizol and utilization of A. niger as its biocatalyst. © 2022 Informa UK Limited, trading as Taylor & Francis Group.

Author Keywords
Aspergillus niger; Biotransformation; dihydroxylation; enantioselective; green chemistry; xanthorrhizol

Index Keywords
7R 10S 10,11 dihydro 10,11 dihydroxyxanthorrhizol, cytochrome P450, dimethylaniline monooxygenase, magnesium sulfate, plant medicinal product, unclassified drug, xanthorrhizol, phenol derivative, xanthorrhizol; antifungal activity, Article, Aspergillus niger, attenuated total reflectance Fourier transform infrared spectroscopy, biocatalyst, biological activity, biotransformation, carbon nuclear magnetic resonance, chemical composition, chemical structure, column chromatography, cost effectiveness analysis, Curcuma xanthorrhiza, cyclization, dihydroxylation, enantioselectivity, fungus culture, green chemistry, heteronuclear single quantum coherence, hydroxylation, infrared spectroscopy, liquid chromatography-mass spectrometry, mass fragmentography, mass spectrometry, nonhuman, proton nuclear magnetic resonance, rhizome, spectroscopy, thin layer chromatography, X ray crystallography, Aspergillus, Aspergillus brasiliensis, biotransformation, chemistry, Curcuma, metabolism, stereoisomerism; Aspergillus, Aspergillus brasiliensis, Aspergillus niger, Biotransformation, Curcuma, Phenols, Stereoisomerism

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