عنوان مقاله:

Isolation and Purification of Antifungal Compounds from the Green Microalga Chlorella vulgaris

محل انتشار:

فصلنامه گزارش های زیست فناوری کاربردی, دوره 9, شماره 2 (سال: 1401)

تعداد صفحات اصل مقاله: 11

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خلاصه مقاله:

Introduction: The current study aimed to purify antifungal compounds from Chlorella vulgaris extracts, fractions, sub-fractions and pure compounds against different strains of mycotoxigenic fungi.Materials and Methods: Antifungal activity was conducted using disc diffusion assay, TLC-bioautography and Minimum Inhibitory Concentration (MIC). Isolation, purification and structure elucidation of antifungal compounds were carried out using column chromatography, Thin Layer Chromatography (TLC), UV-Vis spectrophotometer, Gas Chromatography–Mass Spectrometry (GC-MS), and Nuclear Magnetic Resonance (NMR).Results: C. vulgaris Diethyl Ether Extract (DEE) showed the highest antifungal activity against all tested fungi with inhibition zone from ۱۱.۵ to ۲۱.۹ mm. By fractionation of DEE, Fraction F۳ (chloroform:methanol, ۵۰:۵۰) and F۵ (methanol ۱۰۰%); sub-fraction CF۳-۱۰ and CF۵-۱۰ exhibited antifungal activity against all tested fungi. Two pure compounds, hydroxyphenophytin B and hexadecanoic acid methyl ester, with antifungal activity were isolated from CF۳-۱۰ and CF۵-۱۰, respectively.Conclusions: C. vulgaris DEE and isolated compounds can be used as promising antifungal agents from natural sources against mycotoxigenic fungi at post-harvest or storage stages.

کلمات کلیدی:

Chlorella vulgaris, Fractions, Antifungal, Mycotoxigenic Fungi, Bioautography