عنوان مقاله:

Bioactivity and Chemical Profiling of Medicinal Fungi Inonotus cuticularis and Inocutis levis (Hymenochaetaceae) using Chromatography and Mass Spectrometry

محل انتشار:

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خلاصه مقاله:

Polypore fungi are among the most preventable mushroom-forming fungi with known therapeutic potential, though only a few species have been securitized for their metabolites. This study examines the biological activity and bioactive compounds of Inocutis levis and Inonotus cuticularis collected in Iran. We examined the antimicrobial, antioxidant, and cytotoxic properties of n-hexane, acetone, and ethyl acetate extracts. Chemical profiles were assessed by chromatography and mass spectroscopy techniques. The acetonic extracts exhibited the highest antibacterial effect against all tested microbial strains. The IC۵۰ values for DPPH and ABTS assays ranged from ۱۴۴.۹۸ – ۴۶۹.۰۲ µg/mL and ۱۲۸.۰۶ – ۳۳۱.۵۲ µg/mL, respectively. The MTT assays for both fungi indicated low toxicity on normal HDF cells with IC۵۰ values ranging from ۱۴۴۷ to ۱۹۰۸ µg/mL. HPLC-DAD analysis showed a high level of gallic acid among other detected phenolic compounds. LC-ESI-MS/MS analysis displayed the presence of various sesquiterpenoids, furans, and styrylpyrone-class compounds. Inotilone, inonotin H and C, phellinulin B and M, cinnamic acid, p-coumaric acid, caffeic acid, phelligridin A and D, hispidin, and gallic acid were found in both species. Daedalin A is reported for the first time from the fungal family Hymenochaetaceae. In addition, several volatile compounds, including alkene hydrocarbons and some fatty acids, such as linoleic acid, were detected in GC-MS analyses. We suggest that I. levis and I. cuticularis have dual antibacterial and antioxidant properties and diverse metabolites, potentially opening new windows in future natural product-based medicine.

کلمات کلیدی:

Bioactive compounds, chemical composition, Daedalin A, Hispidin, Polypore fungi, Streptococcus mutans