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Research Article

Exploring the Molecular Basis of Anticancer Activity in Various Mushroom Species Against Colorectal Cancer Cells

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Abstract

Background: Mushrooms are shown to protect against the side effects of cancer. Therefore, mushrooms with proven anticancer properties and active ingredients are fascinating in the search for new cancer drugs.

Objective: In this study, the effects of extracts from *Hericium coralloides* (M1), *Lactarius deliciosus* (M2), *Lepista nuda*(M3), *Pleurotus ostreatus* (M4), and *Suillus collinitus*(M5) together on HCT116 were investigated. Mesenchymal stem cells (MSCs) were used to study the effect on healthy cells.

Methods: MTT was used to determine cell viability. Dose-response curves were generated, the IC₅₀ values of the compounds were calculated, and the effect of the extracts was compared using it. The FTIR was used to analyze the quantitative changes of the cellular components.

Results and Discussion: The evaluation of the IC₅₀ values of all fungal species showed that they reduced the cell viability of HCT116 cells. In contrast, no significant reduction in cell viability was observed in MSCs. Changes in the ratio of cell membrane lipids, proteins, and cell nucleic acids between control and fungal-treated HCT116 cells were detected by FTIR.

Conclusion: Many of the chemotherapeutic agents are of plant origin, and many resources should still be explored to inhibit the side effects of cancer therapy. The data obtained through this experiment will serve as a reference for studies to be a new source of anticancer drugs in modern pharmacology.

Keywords: [Antiproliferation](#), [mushroom](#), [colorectal cancer](#), [cytotoxicity](#), [FTIR spectroscopy](#), [pharmaceutical research and development \(R&D\)](#).

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Graphical Abstract



Investigating the molecular underpinnings of different mushroom species anticancer activity against colorectal cancer cells.

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