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Cytotoxic, Antioxidant, Antibiofilm, and Antimicrobial Activities of Mushroom Species from Turkey

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Abstract

Mushrooms, which have been collected to meet the nutritional needs of the world for many years, have gained medical importance thanks to the bioactive compounds they produce. Thanks to studies carried out to determine mushroom diversity, the number of species identified is increasing year by year. Accordingly, in recent years, studies conducted to determine the biological activities of metabolites produced by fungi have been increasing. The present study was conducted to determine the cytotoxic, antioxidant, antibiofilm and antimicrobial activities of the seven different mushroom species (*Craterellus cornucopioides*, *Hymenopellis radicata*, *Lepista nuda*, *Pisolithus arhizus*, *Ramaria flava*, *Schizophyllum commune*, and *Tricholoma ustale*) collected from Tokat and Yozgat regions located in northern and central Turkey. Laboratory studies have demonstrated that mushrooms used in this study have different degrees of antibiofilm, antimicrobial, antioxidant and cytotoxic activities. At the end of the study, it is determined that *C. cornucopioides* and *L. nuda* species have the highest antimicrobial activity. In addition, mushroom species have biofilm inhibitory effects on indicator microorganisms at varying degrees ranging between 20.7 and 96.3%. As a result of antioxidant activity studies, it was determined that *T. ustale* has the highest free radical scavenging effect and *P. arhizus*, which has the highest polyphenol content, has the highest reducing power. Finally, it is determined that, among the mushrooms used in the present study, *H. radicata* showed higher selectivity on the MDA-MB-231 breast cancer cell line than on the normal cell line tested, while *C. cornucopioides* showed higher selectivity on the MCF-7 breast cancer cell line.

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