Exploring health beneficial effects of poisonous mushroom *Paxillus involutus* Batsch Fr.

Abstract

In the present study, phenolic and flavonoid composition and biological properties of methanolic extract of wild growing *Paxillus involutus* collected in Serbia have been investigated. Ellagic acid was the most abundant phenolic compound (34.92 μg g-1), followed by 5-O-caffeoylquinic acid (4.51 μg g-1), whereas isoorientin was the most abundant flavonoid (3.42 μg g-1). *P. involutus* turned out to be a rich source of phenolic compounds (74.67 mg GAE g-1 d.w.), whereas total flavonoid content was significantly lower (4.05 mg QE g-1 d.w.). As for the various investigated biological activities, methanolic extract exerted high level of antioxidant, antimicrobial and antibiofilm activities. The highest antioxidative potential was measured by TAC (350 TE mg g-1 d.w.), whereas evaluation of antimicrobial properties showed selective antimicrobial potential toward tested pathogenic microorganisms, with resistant strain of *E. coli* being the most susceptible to the activity of the extract (MIC 0.08 mg mL-1, MBC 0.16 mg mL-1). Furthermore, methanolic extract of *P. involutus* demonstrated genotoxicity, severe hemolysis effects and selective cytotoxicity against colon cancer cells. From the obtained data, it may be concluded that investigated mushroom albeit being toxic for human consumption, may be considered as a source of highly bioactive components with potential application in drug development.