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Anticancer Activity of Edible Coprinus Mushroom (Coprinus comatus) on Human Glioblastoma Cell Lines and Interaction with Temozolomide

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Abstract : Coprinus comatus (O. F. Müll.) Pers.) should not be confused with the common Ink Cap, which contains coprine and can induce coprine poisoning. We study the possibility of applying coprinus mushroom (Coprinus comatus), available in Poland, as food product supporting the treatment of human glioblastoma cells. The U87MG and T98 glioblastoma cell lines were exposed to water (CW) or ethanol 95° (CE) Cantharellus extracts (50-500 µg/ml), with or without temozolomide (TMZ) during 24, 48 or 72 hours. The cell division was examined by the H^3-thymidine incorporation. The statistical analysis was performed using Statistica v. 13.0 software. Significant differences were assumed for $p < 0.05$. We found that both, CW and CE, administrated alone, had inhibitory effect on cell lines growth, but the CE extract had a higher degree of growth inhibition. The anti-tumor effect of TMZ (50 µM) on U87MG was enhanced by mushroom extracts, and the effect was lower to the effect after using Coprinus comatus extracts (CW and CE) alone. A significant decrease ($p < 0.05$) in pro-MMP2 (82.61 ± 6.3% of control) secretion in U87MG cells was observed after treated with CE (250 µg/ml). We conclude that extracts of Coprinus comatus, edible mushroom, present cytotoxic properties on U87MG and T98 cell lines and may cooperate with TMZ synergistically enhancing its growth inhibiting activity against glioblastoma U87MG cell line.

Keywords : anticancer, glioma, mushroom, temozolomide
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