

The Activity of Polish Propolis and Cannabidiol Oil Extracts on Glioblastoma Cell Lines

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Abstract : Glioblastoma (grade IV WHO) is a rapidly progressive brain tumor with very high morbidity and mortality. The vast malignant gliomas are not curable despite the therapy (surgical, radiotherapy, chemotherapy) and patients seek alternative or complementary treatments. Patients often use cannabidiol (CBD) oil as an alternative therapy of glioblastoma. CBD is one of the cannabinoids, an active component of *Cannabis sativa*. THC (Δ^9 -tetrahydrocannabinol) can be addictive, and in many countries CBD oil without THC ($< 0,2\%$) is available. Propolis produced by bees from the resin collected from trees has antiglioma properties in vitro and can be used as a supplement in complementary therapy of gliomas. The aim of this study was to examine the influence of extract from CBD oil in combination with propolis extract on two glioblastoma cell lines. The MTT (Thiazolyl Blue Tetrazolium Bromide) test was used to determine the influence of CBD oil extract and polish propolis extract (PPE) on the viability of glioblastoma cell lines - U87MG and LN18. The cells were incubated (24, 48 and 72 h) with CBD oil extract and PPE. CBD extract was used in concentration 1, 1.5 and 3 μM and PPE in 30 $\mu\text{g}/\text{mL}$. The data were presented compared to the control. The statistical analysis was performed using Statistica v. 13.0 software. CBD oil extract in concentrations 1, 1.5 and 3 μM did not inhibit the viability of U87MG and LN18 cells (viability more than 90% cells compared to the control). There was no dose-response viability, and IC50 value was not recognized. PPE in the concentration of 30 $\mu\text{g}/\text{mL}$ time-dependently inhibited the viability of U87MG and LN18 cell line (after 48 h the viability as a percent of the control was $59,7\pm 6\%$ and $57,8\pm 7\%$, respectively). In a combination of CBD with PPE, the viability of the treated cells was similar to PPE used alone ($58,2\pm 7\%$ and $56,5\pm 9\%$, respectively). CBD oil extract did not show anti-glioma activity and in combination with PPE did not change the activity of PPE.

Keywords : anticancer, cannabidiol, cell line, glioblastoma

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