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Testing the effect of novel molecules on glioblastoma cells

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Introducton: Glioblastoma (GBM) is the most abundant malignant tumor in adults (McDowell et al., 2011, Bush et al., 2016) with an incidence of 3.19 cases per 100,000 person/year (Dolecek et al., 2012). GBM is the most aggressive brain neoplasm, with a high probability of recurrence. The pa<ern of growth of GBM is highly infiltraUve which minimize chances for total resecUon of tumor. The tradiUonal treatment for glioblastoma includes surgical removal followed by chemotherapy and radiotherapy depending on clinical condiUon (Stupp et al., 2005). However, the recurrence rate is high and oXen resistance to both chemotherapy and radiotherapy ensues. In addiUon, it may affect the deeper brain Ussues, thus prevenUng surgical opUon as an iniUal step for treatment (Weller et al., 2013). Therefore, new therapeuUc tools are needed.

Aim of the study: The current study aims at assessing the effect on the human U87 glioma cell line of novel substances, synthesized by Prof. Zago<o's laboratory, that can be used as promising therapeuUc agents. The substances were chosen for showing some similarity in their structure with a component of the bee's propolis and some plants, caffeic acid phenethyl ester (CAPE), which has been shown to have some effect in different cancer types (Chung et al. 2004).

Materials & methods:

- Cell culture techniques according to lab protocol
- Cells were treated for 24 or 72 hours with one of the 10 substances (see below)
- Wright staining, count cells to determine the percentage of apoptoUc and necroUc cells
- Measurement of cell migraUon by In Vitro Scratch Assay (wound healing experiment)
- StaUsUcal analysis: t-test, each treatment vs. control (DMSO at the same concentraUon used for treatments).

Results: Among 10 different novel substances tested, substances 5, 7, 8 and 9 showed variable effects, indicated by morphological and molecular evaluaUon. Effect ranges from apoptosis, necrosis and cytostaUc effect on GBM cells.

Conclusions & future works: In conclusion, an iniUal screening of 10 substances, different in their molecular properUes, highlighted a promising scaffold that will be explored in future works. More informaUon will be added from ongoing experiments on the expression of various proteins.

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