UNIVERSITÀ DEGLI STUDI DI PADOVA

MASTER DEGREE OF MEDICAL BIOTECHNOLOGIES

MOLECULAR MEDICINE DEPARTMENT

Master Thesis Title: **Testing The Effect of Novel Substances On Glioblastoma Cells**

Effetti di una serie di nuovi composti su cellule di glioblastoma

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Background:

Glioblastoma 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). Glioblastoma is the most aggressive brain neoplasm, with a high probability of recurrence. Surgical treatment is not an easy choice since the pattern of growth of tumor is highly infiltrative which minimize chances for total resection of tumor.

The traditional treatment for glioblastoma includes surgical removal followed by chemotherapy and radiotherapy depending on clinical condition (Stupp et al., 2005).
However, the recurrence rate is high and often resistance to both chemotherapy and radiotherapy ensues. In addition, it may affect the deeper brain tissues, thus preventing surgical option as an initial step for treatment (Weller et al., 2013). Therefore, new therapeutic tools are needed.

Aim of the study:

The current study aims at assessing the effect on glioma cells of novel substances, synthesized by Prof. Zagotto's laboratory, that can be used as promising therapeutic 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. This substance has been shown to have some effect in different cancer types (Chung et al. 2004).

Materials and methods:

- Cell culture techniques according to lab protocol.
- Measurement of Cell Migration by In Vitro Scratch Assay.

- Wright staining and morphological analysis.
- RT PCR and immunofluorescence analysis.

Results:

Among 10 different novel substances tested, 3 substances showed variable effects, indicated by morphological and molecular evaluation. Effect ranges from apoptosis, necrosis and cytostatic effect on glioblastoma cells.

Conclusions:

In conclusion, an initial screening of 10 substances, different in their molecular properties, highlighted a promising scaffod that will be explored in future works.

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