**6-methyl(sulfinyl)hexyl isothiocyanate (6-MITC) and glycyrrhetinic acid (GA) enhances cytotoxicity in glioblastoma cells**

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**Introduction.** Treating pediatric glioblastoma effectively remains a significant challenge, with limited success seen in children. 6-methyl(sulfinyl) hexyl isothiocyanate (6-MITC), isolated from Wasabia japonica (wasabi) and glycyrrhetinic acid (GA) from liquorice root have been shown to possess anti-cancer properties. Selectivity is an important issue for cancer prevention and therapy. Understanding the effects of these natural compounds and their underlying mechanisms presents a promising avenue for developing new, more targeted chemotherapeutics with fewer side-effects.

U251-MG

OUMS-36T-7

**Aims**. To examine the selective cytotoxic effects of 6-MITC and GA on glioblastoma cells (U251-MG) and fibroblast cells (OUMS-36T-7).

**Methods**. Cytotoxicity was assessed after 24, 48 and 72 hours of incubation with 10 µM 6-MITC and 50 µM GA, using resazurin reduction assays to measure cell viability.

Figure 1. Effects of 6-MITC and GA treatment on OUMS-36T-7 fibroblast cells and U251-MG glioblastoma cells. Cells were treated with 10 μM 6-MITC and 50 μM GA for 24, 48, and 72 hours. Data represent mean viability ± standard error of the mean (SEM).

**Results.** The results indicate a greater than 50% reduction in the viability of U251-MG, glioblastoma cells, after 48 hours of treatment with 10 µM 6-MITC and 50 µM GA (n=6) (*p*< 0.05). Additionally, a greater selectivity in the U251-MG, glioblastoma cells (n=6) was notable compared to the control OUMS-36T-7 fibroblast cells (n=6) after 24, 48 and 72 hours of treatment with 10 µM 6-MITC and 50 µM GA (*p*< 0.05).

**Discussion.** These results suggest that the combinatorial 6-MITC and GA exhibit a selective time-dependent cytotoxicity against glioblastoma cells. This highlights their potential as candidates for developing more effective chemotherapeutic agents with fewer side-effects for patients. Lower concentrations such as those used in this study are noteworthy as they account for clinically relevant parameters such as bioavailability and toxicity.