Effects of *Gomphrena macrocephala* Root Extracts in Glioblastoma, Neuroblastoma, and Cerebellar Cultures in normal aerobic conditions and under oxygen and glucose deprivation.


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*Gomphrena macrocephala*, a plant from savanna, known as Brazilian ginseng is called by the indians as ‘paratudo’. Its root rich on flavones, saponinas, frutanes and glycosides has antioxidant, anti-inflammatory and invigorating effect. The aim of this study is to analyze the citotoxicity of *Gomphrena macrocephala* root extracts (GM) in glioblastoma, neuroblastoma and cerebellar (neuronal-glial) primary cultures. We also investigated if GM has neuroprotective effects and can prevent neuron and glia cell death under isquemic condition.

Cultures of cells in normal aerobic conditions and under oxygen and glucose deprivation were treated with 20 to 10.000 µg/mL of GM root extracts. The cell survival were determined by the reagent resazurin. GM didn’t have any toxic effect in GL-15 human glioblastoma cell cultures until concentration of 10.000 µg/mL. For N2a rat neuroblastoma cultures GM had EC50 of 6158 µg/ml, 229 µg/mL and 180 µg/mL in 24, 48 and 72 hours of treatment, respectively. In rat cerebellar primary cultures, GM didn’t have toxic effects during 24 and 48 h of treatment, but showed EC50 of 919,45 µg/mL after 72 h of treatment. Oxygen and glucose deprivation for 4 hours trigger cell death in cerebellar cultures, changing cell morphology and stimulating glial cell proliferation. Conclusions: GM showed antitumor effects for N2a rat neuroblastoma cells and has the neuroprotective potential under isquemic conditions.

Key words: *Gomphrena macrocephala*, citotoxicity, oxygen and glucose deprivation, neuron, glia, cell culture, glioblastoma

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