Antitumor activities of synthetics alkaloids on glioblastoma cells


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Glioblastoma are the most malignant tumors of the CNS, and present a poor prognosis. Current treatments adopted have in general only modest activity. Plants derived alkaloids have been demonstrated antitumor activity and may be adopted for development of synthetic modified anticancer drugs. In this study we evaluated the effect of 28 synthetic alkaloids, based on natural vegetal products, on viability of on human (GL-15, U251) and murine (C6) glioblastoma cell lines, and normal glial cells (astrocyte/microglia primary culture). Between alkaloids tested we observed a dose-dependent cytotoxic effect of RLB87, RJT 117 and RJT 68 on glioma cell after 72 h treatments, as observed by reduction on mitochondrial activity measured by MTT test. The alkaloid RLB87 was the most active, with an IC-50 value of 67.4 and 99.1µM in GL-15 and C6 respectively. No toxic effect was observed with 100 µM on normal glial cells for all tested alkaloids. Moreover, as observed by phase contrast microscopy and by immunocitochemistry for cytoskeletal proteins vimentin and α-tubulin, RLB-87 induced changes on morphology of glioma cells with much contracted cellular bodies and thin cellular process. These finds are promising in terms of antitumor potential synthetic alkaloids RLB87, RJT 117 and RJT-68. Further studies will be conducted to evaluate their mechanisms of action and selectivity in glioma cells and its molecular targets for further application on therapy.

Word Keys: synthetic alkaloids, glioblastoma, selective action
Supported by: FAPESP, and CAPES