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CYTOTOXIC AND APOPTOTIC EFFECTS OF MEDICINAL PLANT AGAINST NEUROGLIOMA

Michael Shivers, Clement Yedjou and Paul B. Tchounwou

Natural Chemotherapeutics Research Laboratory, NIH-RCMI Center for Environmental Health College of Science, Engineering and Technology, Jackson State University, 1400 Lynch Street, P.O. Box 18540, Jackson, MS, USA

Abstract: Neuroglioma, also called gliocytoma, is one of the common malignant tumors in central nervous system at present. Neuroglioma can make aggressive growth around brain tissue, so complete radical treatment can be realized by single excision. Nutritional and botanical treatments have been found useful in treating neuroglioma and other types of cancers. Medicinal has been reported to have not only diverse therapeutic effects for many tropical diseases, but has recently been shown to possess anti-cancer properties. Therefore, the goal of this research was to determine the therapeutic mechanisms of medicinal plant leaf extracts in the management of brain tumor. To achieve this goal, Human H4 neuroglioma cells were treated with different doses of medicinal plant leave extract for 48 hours. Cell survival was determined by MTs assay. The extent of oxidative cell/tissue damage was determined by measuring malondialdehyde concentrations by spectrophotometry. Cell apoptosis was measured by flow cytometry assessment (Annexin V/PI assay). Data obtained from the MTS assay indicated that plant extract significantly ($p < 0.05$) reduced the viability of in H4 cells in a dose-dependent manner. We detected a significant ($p < 0.05$) increase in malondialdehyde (MDA) concentrations in plant extract -treated glioblastoma cells compared to the control. Flow cytometry data showed a strong concentration-response relationship between VA exposure annexin V/PI positive cells. Taken together, our finding indicates that plant extract induced cytotoxicity and apoptosis in H4 cells is associated with the formation of MDA, a by-product of lipid peroxidation and biomarker of oxidative stress. At therapeutic concentrations, Medicinal plant induced cytotoxic and apoptotic effects in H4 cells is mediated by oxidative stress.

Key Words*:* Medicinal Human H4 neuroglioma cells, cell survival; oxidative stress; apoptosis

Acknowledgements: The research described in this publication was made possible by a grant from the National Institutes of Health (NIMHD-G12MD007581) through the RCMI-Center for Environmental Health at Jackson State University.