Control of tumor using *Clerodendron infortunatum* extract as a Radiotherapy-Adjuvant in mice model

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Neutraceuticals and phytochemicals have been shown to act as non-toxic adjuvants for tumor radiotherapy. The present study investigates the possibility of using *Clerodendron infortunatum* extract (CIE) as an adjuvant to radiotherapy against solid tumor of DLA cells in mouse model. The oral administration of CIE at various doses (100 – 300 mg/kg) in combination with 4 Gy whole-body gamma radiation brought about significant DNA damages in tumor cells and consequent regression in the tumor volume in a concentration dependent manner while, DNA damage in the bone marrow cells of mice administered with CIE in addition to whole body gamma radiation exposure, was found significantly prevented. Histology of tumor tissue in animals which received whole body gamma radiation developed condensed nuclei (apoptosis) and anucleated cells (necrosis), while number of apoptotic and non-nucleated cells were found to be increased in tumor tissues of mice which received irradiation along with CIE. The gene expression profiles of tumor tissue in response to CIE administration or irradiation in combination with CIE administration was investigated with apoptotic and DNA damage response elements like *bax, bcl-2* and *atm* respectively. *Bax/bcl-2* ratio and *atm* expression was found increased in irradiation in tumor tissue while its ratio and expression were further enhanced by CIE administration. The survival study on the effect of oral administration of CIE in combination with gamma irradiation showed a dose dependent increase in providing survival advantage when compared with animals which received either radiation or CIE. These results suggest that *Clerodendron infortunatum* can be a potential source of a phytochemical which may be used as an adjuvant for radiotherapy.

Keywords: *Clerodendron infortunatum*, adjuvant, radiotherapy, apoptosis, necrosis.