Cytotoxicity and Pro-Apoptosis on MCF-7 Breast Cancer Cells Using Polyherbal Formulation (PHF), MAT20

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Standard approaches for cancer treatment involves surgery, chemotherapy and radiation. Although these approaches have resulted in prolongation of the survival window, it is also accompanied with serious side effects in patients. Integrative approaches using multi-target poly herbal adjuvants alongside these standard approaches can help mitigate these side effects. The poly herbal formulation MAT 20 (in-house formulation consisting of Ocimum sanctum, Phyllanthus emblica and Moringa oleifera) was firstly investigated for its cytotoxic and pro apoptotic activity. Based on the results obtained from these studies, its efficiency on the basis of the Integrative Oncology Platform shall be further explored. In this study, we initially compared the cytotoxic activity of the individual components in MAT 20 against the formulation using MTT assay on MCF 7 cells to determine the respective IC 50 values. Subsequently, an apoptosis assay was carried using Hoechst and DAPI staining methods. Significantly lower IC50 values were obtained for MAT 20 at 24 hours (33.01µg/mL) and 48 hours (21.09 µg/mL) exposure when compared to individual herbal extracts. Hoechst staining revealed 51% positive cells at 48hrs in MAT 20 treated group as compared to untreated cells in the control group. Our results demonstrate MAT 20 to be a promising polyherbal formulation, which exhibits superior cytotoxic efficacy when compared to its individual components. It also establishes its promise as a complementary drug to be used alongside the current cancer treatments, making it essential to explore its potential in Integrative Oncology Platform.