

Anticancer and Anti-Apoptotic Potential of Tridham and 1,2,3,4,6-Penta-O-Galloyl- β -D-Glucose in MCF-7 Breast Cancer Cell Line

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Abstract : Background: Breast cancer is emerging as one of the leading cause of cancer related deaths and hence there arises the need to look out for drugs which are more targets specific with minimal side effects. In recent times, there is a shift towards alternative medicine due to low cost and less side effects. Siddha system of medicine is one the oldest system of medicine practiced against various ailments. Tridham (TD) is a herbal formulation prepared in our laboratory consisting of Terminalia chebula, Elaeocarpus ganitrus and Prosopis cineraria in a definite ratio (TD) and its anticancer potential is evaluated in terms of induction of apoptosis. Objective: The present study was designed to investigate the anti proliferative effect of TD and 1,2,3,4,6-penta-O-galloyl-b-D-glucose (PGG), a pure compound isolated from TD on human mammary carcinoma cell line (MCF-7). Materials and Methods: Cell viability was studied using MTT analysis and trypan blue staining. Mitochondrial membrane potential was studied using DAPI staining. The protein and mRNA expressions of pro-apoptotic and anti- apoptotic markers namely Bax, Bad, Bcl-2 and caspases were also assessed by Western Blotting and RT PCR. Results: Viability studies of TD and PGG treated MCF-7 cells showed an inhibition in cell growth in time and dose dependent manner. The alteration in mitochondrial membrane potential was restored through treatment with TD and PGG which was confirmed by DAPI staining. The protein and mRNA expression of pro-apoptotic markers was found to be significantly increased in TD and PGG treated cells with a concomitant decrease in anti-apoptotic markers. Conclusion: The results of the study suggest that TD and PGG exhibit their anticancer effect through its membrane stabilizing property and activation of apoptotic cascade in MCF-7 cells.

Keywords : apoptosis, mammary carcinoma, MCF-7, penta galloyl glucose, Tridham

Conference Title : ICHHAH 2017 : International Conference on Holistic Health and Alternative Healthcare

Conference Location : Bangkok, Thailand

Conference Dates : February 07-08, 2017