

Apoptosis and Anti-tumor studies of Premna coriacea in breast cancer cell lines and in vivo animal models

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Short Communication

ABSTRACT

Premna is a genus of about 200 species including some Large climbers ; Scandent shrubs, 4 - 5 m high. Stems with pale ashy brown bark, belongs to the family Verbenaceae. Antiproliferative, apoptosis induction studies, anti-inflammatory studies and in vivo anticancer studies has been studied by various methods and models with PCEE. The Premna coriacea ethyl acetate extracts (PCEE) showed potential cytotoxicity against MCF-7 cell lines. The results showed that MCF-7 cell proliferation was significantly inhibited by PCEE with the IC₅₀ value 560 µg/ml. The standard drug doxorubicin with the IC₅₀ value of 2.38 µg/ml and PCEE with mild cytotoxic with the cell death of 56.3% against MCF-7 cell lines. The effect PCEE on cell cycle was studied using flow cytometry in MCF-7 cell lines. The percentage of cell in various phases like G₀/G₁, S and G₂/M phase of the cell were calculated. The results shows that the PCEE inhibited cells in the G₀/G₁ phase in the MCF-7 cells. Doxorubicin arrested the G₂/M phase of the cell in MCF-7 cells. Apoptotic changes in cells may be studied using AO/EB fluorescent staining. The apoptotic effect of PCEE was studied in MCF-7 cell lines and the percentage of apoptotic cells were calculated. The levels of p-53, phospho-p53, Bad, phospho-Bad, cleaved caspase 3 and cleaved PARP in MCF-7 cell lines were studied by ELISA method. There was a slight decrease in p53 in doxorubicin. Lifespan of ascites tumour bearing animals induced by EAC cells was found to be increased by PCEE in 200mg/kg and 400mg/kg treatment. PCEE 400mg/kg b.wt group the lifespan was increased by 42.86% and PCEE 200mg/kg group the increase was 13.34%. The survival rate of solid tumour bearing animals was also significantly increased by PCEE treatment. Similar findings was reported in DLA solid tumor model. Similar findings was reported in DLA solid tumor model. Therefore, the effect of PCEE on the inhibition of IL-1 β and TNF- α was investigated. The IL-1 β and TNF- α levels in supernatants of cells treated with PCEE were significantly decreased compared with the LPS group, in a dose-dependent manner. Our research indicates that these plants possess anticancer and anti-inflammatory activities which may be due to the presence of active phytoconstituents flavonoids and phenolic compounds. It can be concluded that the plant extracts may be a source of new compounds for anticancer and anti-inflammatory.

Biography

Dr. Karthikeyan M. is an Associate Professor at Department of Pharmacology, Ashokrao Mane College of Pharmacy, Kolhapur, Maharashtra. His area of interest is in drug discovery from natural products for cardiovascular diseases, inflammatory diseases and cancer. He served as joint secretary for the Pharmaceutical and Biological Society, India. He is a member of the Indian Hospital Pharmacist Association (IHPA), World Association of Medical Editors (WAME), USA, Asian Pacific Association of Medical Editors (APAME) and Science Advisory Board (SAB). He has worked as editors for various national and International Journals. He has published more than 40 research and review articles in national and International Journals. He has published book chapters. He has presented papers in various national conferences. He had received grants from ICMR and Kerala State Council for Science, technology and environment.