Herbal Remedies as Green Therapeutic Approaches against Cancer: Current & Future Prospects

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Abstract

Radiotherapy plays an essential primary role in cancer patients. The findings of our current research also signify that the use of a natural anticancer remedies could inhibit cancer cells and concurrently, these natural remedies could exhibit radioprotective activity against the healthy cells during radiotherapy. The P. longifolia being the most important indigenous medicinal plants, are found throughout Malaysia and generally use by traditional healers to treat various diseases. The MTT assay results disclosed a lowest IC50 value of 14.181 µg/ml as P. longifolia leaf extract debilitate HeLa cells. The cytological observations underlined cell shrinkage, nuclear and chromatin condensation, multinucleation, membrane blebbing, punctures, cytoplasmic extrusions and formation of apoptotic bodies, which are correlating within Light Microscope (LM), Scanning Electron Microscope (SEM), Transmission Electron Microscope (TEM) and HoloMonitor (HM) images. Further biochemical tests were performed to verify this apoptosis resemblance. P. longifolia is deduced to effectuate distinctive morphological features of cell death in conformity to apoptosis. Subsequently, the radioprotective effect of P. longifolia was studied in mice. P. longifolia treatment rendered remarkable improvement in mice survival (27 days), compared to 100% mortality in irradiated groups mice within 14 days.Significant increases in haematological parameters were observed in the animals pretreated with leaf extract. Pre-irradiation administration of P. longifolia leaf extract also increased the CFU counts of the spleen colony and increased the relative spleen size. A dose-dependent decrease in lipid peroxidation levels and a significant increase in superoxide dismutase and catalase activity were observed in the animals pretreated with P. longifolia. P. longifolia pretreatment also resulted in the regeneration of the mucosal crypts and villi of the intestine. Moreover, pretreatment with P. longifolia leaf extract also showed restoration of the normal liver cell structure and a significant reduction in the elevated levels of ALT, AST and bilirubin compared. We also firstly reported the protective effect of P. longifolia leaf on DNA damage-induced by hydroxyl radicals. Therefore, we have reported the potential uses of P. longifolia leaf as green therapeutic approaches, as well as radioprotectors against the adverse effects of irradiation on healthy cells during radiotherapy as a future prospects.

Biography:

Sreenivasan Sasidharan has completed his PhD from University Sains Malaysia in 2007. He is the Associate Professor in Institute for Research in Molecular Medicine of Universiti Sains Malaysia, a public University in Malaysia. He has over 160 publications with total impact factor of 175, multiple book chapters, significant grant support, and over 100 posters/abstracts at national and international meetings as well as Organizer, Keynote, Invited Speaker and chair of International & National Congresses. Has been serving as an Editorial Board Member and Reviewer of international journals. He reviewed more than 100 manuscript for international journal. His research interests include Medicinal plants and their role in Health and Disease Management, Molecular Mechanisms and Biology of Free Radicals, Antioxidants, Anticancer, Antimicrobial and also isolations and identification of phytochemicals from local natural resources for various biotechnology purposes. He also graduated more than 15 post graduate student as main supervisor.