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Protection from radiation and radiation dose response with dose modification factor of *Phyllanthus niruri* on *Mus musculus*: Standardization of radioprotector effect

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The effect of aqueous (PnAq) and alcoholic (PnAl) extracts (5-250 mg/kg) of *Phyllanthus niruri* (Family: Euphorbiaceae) on *in vivo* gamma radiation induced chromosome aberration and *in vitro* antioxidant activity (5-500 µg/ml) by Fenton reaction were studied with dose modification factor and radiation dose response. The present work was also aimed to optimize the route of administration; PnAl was administered via Intraperitoneal (I.P), Intramuscular (I.M), Intravenous (I.V) and oral routes. The extract was administered 1 hour prior to irradiation dose of 4Gy. The percentage of aberrant cells was calculated after 24 hours. DMF was calculated by observing survival rate following whole body irradiation with 8, 9, 10 and 11Gy radiation exposure with and without 200 mg/kg I.P PnAl extract before 1 hour of exposure. Radiation dose response effect of 200 mg/kg of PnAl was observed against 1, 2, 3 and 4Gy gamma ray exposure by scoring different types of chromosomal aberrations from bone marrow metaphase plates. PnAl (250 mg/kg) showed highly significant decrease in chromosomal aberrations compared to radiation treated group. The I.P administered group showed significantly reduced aberrant cell percentage compared to I.M, oral, I.V and sham control groups. *P. niruri* alcoholic extract significantly ($p < 0.05-0.001$) reduced percent aberrant cell and major aberrations like breaks, rings and polyploidy against 4Gy radiation. It showed DMF of 1.12 with improved survival rate, delayed occurrence of lethality and radiation sickness. The optimum dose of *Phyllanthus niruri* alcoholic extract is established to be 200 mg/kg I.P., having safe and effective radioprotector efficiency. Alcoholic extract of *P. niruri* decreased the complex aberrations like ring, dicentric and SDC indicating significant protection of bone marrow against double strand breaks and multiple chromosomal lesions.

Biography

Indu Thakur has obtained her PhD in Radiation Biology at the Barkatullah University, Bhopal, Madhya Pradesh in 2010 under the guidance of Dr P. Uma Devi. She has been working as an Assistant Research Officer at the Jawaharlal Nehru Cancer Hospital and Research Centre, Idgah Hills, Bhopal.

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