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Immunomodulatory role of sesamol after radiation exposure in C57BL/6 mice

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Abstract

Background: Intentional and accidentally exposure of high dose ionizing radiation results in short and long term effects in biological system. Immune cells are vulnerable to radiation induced cell death in mature lymphocytes and precursor of monocyte and granulocyte in bone marrow. Depletion of mature immune cells, which together defend against microbial invasion leads to the massive cell death from the infection. Need to development of immunomodulatory drug to accelerate the recovery of immune system after radiation exposure. Our aim is to study the immunomodulatory role of sesamol after radiation induced immunosuppression.

Methods: C57BL/6 mice were exposed to 7.5 Gy of whole body irradiation (Co60Y-irradiation source) and sesamol was orally administered 30min prior to irradiation. Mice were sacrificed on Day 1 and 14 after radiation exposure and isolate all lymphoid organ. Proliferation of bone marrow derived mononuclear and stem cells were analysed by flowcytometry. Expression of cell surface marker of Th and Tc cells was measured in blood and spleen cells. Activation of peritoneal macrophages was analysed by morphological observation and cell surface marker of MHC I and MHC II. Expression of anti-inflammatory protein was observed in intestine

Results: Pre-administration of sesamol reduced the genotoxicity in bone marrow and spleen cells and maintained organ index. Sesamol balance the T cell homeostasis in peripheral blood and spleenocyte cells by ameliorate the proliferation of the myeloid stem cell in bone marrow. it reduced the activation of M2 type of macrophages and expression of MHC protein which directly impact on downregulating and secretory anti-inflammatory protein COX-2, INOS and IL-6 in intestine. Collectively, these findings demonstrated immunomodulatory role of Sesamol for maintaining the homeostasis of the immune system after radiation exposure.

Pharmacologic inhibition of XOR resulted in improved vascular and cardiac function. These results indicate, in this/these models of obesity, UA is not causative of metabolic dysfunction whereas elevated XOR activity does alter cardiovascular function.

Biography:

Akanchha Mani Tripathi is working as a Senior Research Fellow in Department of Radiation Biodosimetry of Institute of Nuclear Medicine and Allied Sciences, Delhi, India. Her research focus is on Radiation bioscience and working on development of radiation countermeasure. She is aiming to understand the Anti- inflammatory role of antioxidants on radiation induced alteration of immune response in murinemodel. She did her Master in Biochemistry from Jiwaji University, Gwalior, India. An Engineer by Profession but has obtained certificate courses in medical field like Neurological Emergencies from Harvard Medical School, Boston, USA.

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