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Hippophae leaves prevent immunosuppression and inflammation in ^{60}Co-γ-irradiated mice

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Abstract

Hippophae rhamnoides has diverse therapeutic applications in Indian, Chinese and Tibetan medicine. Irradiation (accidental/ therapeutic) causes immunosuppression and inflammation. This study investigated effects of our preparation from leaves of *H. rhamnoides* (code SBL-1), on modification of immunosuppression and inflammation in whole body irradiated (10 Gy) mice. One time treatment with SBL-1 before irradiation prevented the radiation induced (i) decrease in immunoglobulin G, (ii) early release of high mobility group box 1 (HMGB1) protein, (iii) increase in tumour necrosis factor-α, myeloperoxidase activity and lipid peroxidation, (iv) liver haemorrhage, stomach enlargement, spleen shrinkage, intestinal oedema and hair fall, (v) decrease in thiols and ferric reducing ability of plasma. HMGB1, a known therapeutic target, has roles in inflammatory diseases, tissue repair and immunomodulation. This study suggested that SBL-1 countered radiation pathologies by modifying HMGB1 regulated inflammatory pathway and restoring adaptive immune response.

Keywords: *Hippophae* leaves; radioprotection; HMGB1; anti-inflammation; immunomodulation.

Introduction

With increasing use of ionizing radiation in every walk of life, the threat of unwanted radiation exposure and therefore, the subsequent damage, is ever increasing. Depending upon the radiation dose different pathological symptoms appear viz., skin inflammation, decrease in blood cell count, nausea, vomiting, memory loss, immunosuppression and damage to