

COMPLICATION OF RADIOTHERAPY ON SKIN TISSUES: MELATONIN AS A RADIO PROTECTOR

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Introduction: Radiotherapy is a major treatment modality for cancers using ionization radiation. Despite its enormous successes recorded, the risk of early and late complications to patients after irradiation is a major setback. Hence, there is a need for further studies on radioprotective agents. One of such agents is melatonin. It is a natural hormone inside the body. Using biochemical analysis, we aim to evaluate the radioprotective effect of melatonin on skin tissues.

Methods: 20 male Wistar rats were randomly assigned to four groups (5 rats in each); G1 (control), G2 (melatonin treated), G3 (radiation only) and G4 (radiation + melatonin). Prior to irradiation of their right legs with a single dose of 8 Gy, G3 and G4 rats were anaesthetized via intraperitoneal injection of ketamine (70 mg/kg) and xylazine (10 mg/kg) while 100 mg/kg of melatonin was administered to G2 and G4 rats 30 minutes before commencement. All rats were sacrificed 10 days after irradiation. Their right femoral skin tissues were extracted for biochemical analysis using Sigma kit (USA) according to the manufacturer's instruction. This study was in accordance with the guidelines for the care and use of animals by Ethics Committee of Tehran University of Medical Sciences.

Results: Biochemical results after irradiation of rat's skin showed that malondialdehyde (MDA) levels significantly increased in the radiation group and significantly decreased in the radiation + melatonin group. In addition, catalase (CAT) and superoxide dismutase (SOD) activities decreased in the radiation group and increased in radiation + melatonin group in comparison with the control group ($p < 0.05$).

Conclusion: Our results have shown that melatonin can significantly reduce the MDA levels as well as increase the CAT and SOD activities after irradiating the skin. Hence, melatonin can be successfully used to ameliorate complications of radiotherapy to the skin.

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