

## **POST-RADIATION CHANGES IN HUMAN ERYTHROCYTES AFTER MANNITOL TREATMENT**

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**We have studied the influence of mannitol on the post-radiation damage to human erythrocytes and erythrocyte plasma membranes.**

**Human erythrocytes (hematocrit of 2%) or erythrocyte membranes suspended in PBS were irradiated with X-rays (dose of 400 Gy) under air. Mannitol was added to erythrocyte or membrane suspensions before or immediately after irradiation at the concentration range from 5 to 200 mM. The suspensions were incubated at 37°C or at ambient temperature for up to 94 hours. The levels of hemolysis, methemoglobin, reduced glutathione and lipid peroxidation were determined after indicated time intervals. We also monitored changes in the erythrocyte volume and shape by flow cytometric measurements.**

**Mannitol decreased the radiation-induced hemolysis. The effect was dependent on mannitol concentration and the time of its addition. The other parameters were influenced by mannitol added before irradiation in a time dependent manner. The addition of mannitol after irradiation did not influence the levels of MetHb and GSH. Mannitol only slightly prevented swelling of erythrocytes when cells were incubated with mannitol above the concentration of 20 mM.**

**These results demonstrate that mannitol stabilizes red blood cells after irradiation preventing hemolysis. This effect may be related not only to the changes in osmotic introduced made by mannitol.**