

# GAMMA-IRRADIATION OR OUABAIN INHIBITION OF Na,K-ATPase FROM TRANSFUSIONAL ERYTHROCYTES HAVE DIFFERENT CONSEQUENCES FOR CELL HOMEOSTASIS

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To prevent Graft vs. Host disease it is usual to irradiate blood products before transfusion. Irradiated red blood cells (RBC) deteriorate during storage and display decreased Na,K-ATPase activity, while membrane damage is suggested by Na<sup>+</sup> and K<sup>+</sup> efflux. This work aims to correlate the Na,K-ATPase inhibition with ion imbalance and changes in membrane composition of irradiated RBC's. RBC's from blood collected in AS-1 bags were separated from platelets and plasma by centrifugation, followed by g-radiation (25Gy), and 14-days storage. Non-irradiated blood or samples incubated with 3mM ouabain were analyzed as controls. Plasma ion levels were measured by flame photometry, Na,K-ATPase activity in RBC ghost membranes was measured by hydrolysis of [ $\gamma$ -<sup>32</sup>P]ATP, and their lipid content assessed by lipid extraction/chromatography. Irradiated samples showed increased K<sup>+</sup> and decreased Na<sup>+</sup> serum levels, while storage of RBCs with ouabain modified neither K<sup>+</sup> nor Na<sup>+</sup> serum levels, but Na,K-ATPase was less inhibited in irradiated (40%) than in ouabain incubated samples (90%). Irradiation did not trigger lipid content changes, but ouabain decreased membrane cholesterol. Therefore, although irradiation decreased Na,K-ATPase activity and induced ion imbalance, ouabain inhibition of the pump during storage modified the membrane cholesterol content. This change in membrane lipid profile suggests new actions of ouabain in RBC membrane homeostasis.

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