Structural Alteration of Erythrocyte Membrane during Storage: a Combined Electrical Conductometric and Flow-Cytometric Study

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Erythrocytes, Dielectric Measurements, Flow-Cytometric Measurements

Alterations in the electrical passive parameters of red blood cell membranes occurring during storage have been investigated by means of two different experimental approaches, i.e., radiowave dielectric spectroscopy measurements and flow-cytometric measurements. We observed a correlation between the appearance of phosphatidylserine molecules in the outer leaflet of the cell membrane and the occurrence of a change in the electrical passive membrane parameters. The electrical re-organization of the membrane, resulting in an increase of its conductivity and permittivity after 5–7 days from blood storage, can be considered as a precursory event for the loss of asymmetry in the lipid distribution across red blood cell membrane.