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ABSTRACT BOOK

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THE POSITIVE EFFECT OF NARINGENIN ON SUPERFICIAL MEMBRANE FLUIDITY IN HUMAN ERYTHROCYTES

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Superficial membrane fluidity is related to erythrocyte deformation behaviour and affects the hemodynamics, especially in hypertension and atherosclerosis. Grapefruit flavanone naringenin, which is used as alternative therapeutic of cardiovascular conditions, can incorporate cellular membrane and change its fluidity. The aim of this study was to examine the effects of two nutritional doses of naringenin (lower - 0.1 $\mu\text{g/ml}$ and higher - 1 $\mu\text{g/ml}$) on superficial membrane fluidity in human erythrocytes, which reflects their deformability. We used electron paramagnetic resonance spectroscopy and fatty acid spin probes (5-DS and 7-DS), the spectra of which are dependent on membrane fluidity. The results showed a significant ($p=0.029$) increase of membrane fluidity near the hydrophilic surface in erythrocytes treated with higher nutritional dose of naringenin, while the lower nutritional dose of naringenin was ineffective ($p>0.05$) in that membrane region. In the hydrophobic layer just below the erythrocyte membrane phospholipid heads both lower and higher dose of naringenin significantly ($p=0.036$ and $p=0.028$, respectively) increased membrane fluidity. These data document the positive and dose dependent effect of naringenin on superficial membrane fluidity in human erythrocytes, recommending its use in the cardiovascular conditions characterized by disturbed hemodynamics.