Effects of *Proteus mirabilis* Lipopolysaccharides with Different O-Polysaccharide Structures on the Plasma Membrane of Human Erythrocytes

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The effects of O33 and O49 *P. mirabilis* lipopolysaccharides (LPSs) on human erythrocyte membrane properties were examined. Physical parameters of the plasma membrane, such as membrane lipid fluidity, physical state of membrane proteins, and osmotic fragility, were determined. The fluidity of the lipids was estimated using three spin-labeled stearic acids of doxyl derivatives: 5-doxylstearic acid, 12-doxylstearic acid, and 16-doxylstearic acid. All the applied labels locate to different depths of the lipid layer and provide information on the ordering of phospholipid fatty acyl chain mobility. LPSs O49 increased the membrane lipid fluidity in the polar region of the lipid bilayer as indicated by spin-labeled 5-doxylstearic acid. An increase in fluidity was also observed in the deeper region using 12-doxylstearic acid only for O33 LPSs. The highest concentration of O33 LPSs (1 mg/ml) increased the motion of membrane proteins detected by the spin-label residue of iodoacetamide. These results showed different actions of O33 and O49 LPSs on the plasma membrane due to the different chemical structures of O-polysaccharides. *P. mirabilis* O33 and O49 LPSs did not induce changes in the membrane cytoskeleton, osmotic fragility and lipid peroxidation of erythrocytes. On the other hand a rise in the content of carbonyl compounds was observed for the highest concentrations of O33 LPS. This result indicated protein oxidation in the erythrocyte membrane. Lipid A, the hydrophobic part of LPS, did not change the membrane lipid fluidity and osmotic fragility of erythrocytes. Smooth and rough forms of *P. mirabilis* LPSs were tested for their abilities for complement-mediated immunohemolysis of erythrocytes. Only one out of seven LPSs used was a potent agent of complement-mediated hemolysis. It was rough, Ra-type of *P. mirabilis* R110 LPS. The O-polysaccharide-dependent scheme of reaction is presented.

Key words: Erythrocyte, *Proteus mirabilis* Lipopolysaccharide, Membrane Fluidity