

Annotation

As a result of the work, the influence of various factors on the erythrocyte aggregation process was investigated by two laser methods: laser tweezers and optical aggregometry technique. In particular, the influence of synthetic macromolecules concentration, temperature, and the presence or absence of the pathology on the aggregation properties of blood was studied *in vitro*.

Erythrocyte aggregation significantly affects the flow of blood in the vessels. The mechanisms leading to erythrocytes aggregation are not fully studied. Obtained results can be used in the future to create new approaches for the correction of the microrheological properties of patients' blood.

It was shown that the microrheological parameters of erythrocyte aggregation differ for people suffering from arterial hypertension comparison healthy donors. The effect of the concentration of various macromolecules and temperature on the strength of the aggregates was studied using optical aggregometry technique. It may be concluded that there is temperature dependent synergetic effect of macromolecules on erythrocyte aggregation and interaction and, consequently, on the blood viscosity.