

Nanocomposites and nonmaterials

Acid hemolysis of human erythrocytes in the presence of ultra-dispersed diamonds

T.A. Shatalova, A.V. Adeljanov, O.A. Gorobchenko, O.T. Nikolov, S.V. Gatash

Department of molecular and medical biophysics V.N. Karazin Kharkov National University, 4 Svobody Sq., Kharkiv 61022, Ukraine.

E-mail: Shatalova_ta@mail.ru

Considerable effort has been devoted to magnetic nanoparticles as novel nanovehicles and targeting agents for biological and biomedical application [1]. The paper presents the results of investigation of ultra-dispersed diamonds

(UDD) on acid hemolysis of erythrocyte and erythrocyte freshly stored 2 hour with UDD. To prepare a suspension UDD was used suspension UDD with an initial concentration of 4 wt. % produced by NPP "SINTA" Ltd., Kharkov. Concentration of erythrocytes in the samples obtained was at 50 wt. %. The concentration of UDD particles 0.03 wt. %. The acid hemolysis was induced 0.004 M solution of HCl [2].

As a result, the study found that the rate of hemolysis of erythrocytes in the presence of UDA significantly higher than the control sample. It was also revealed that storage of erythrocytes since the UDD in saline for 2 hours in an increase of their resistance to the

effects of erythrocytes HCl.

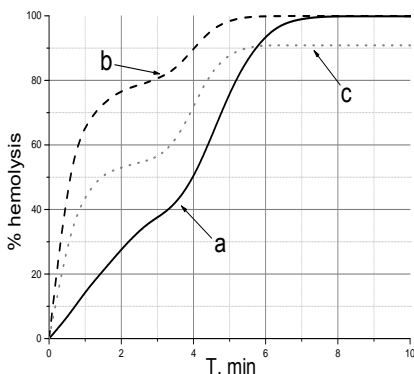


Fig. 1 Integral erythrograms: a-control; b-erythrocytes + UDD; c-erythrocytes stored for 2 hours in the presence of UDD.

1. Hongmei Li, Zhen Li, Jin Zhao, Baoqiang Tang, Yanhong Chen, Yikun Hu, Zhengda He, Yue Wang. Carboxymethyl chitosan-folic acid-conjugated Fe₃O₄@SiO₂ as a safe and targeting antitumor nanovehicle in vitro // *Nanoscale Research Letters*. – 2014. – 9:146 – P. 1-11.
2. Иванов И. Т. Сравнение механизмов кислотного и щелочного гемолиза эритроцитов человека // *Биофизика*. – 2001. – Т. 46. № 2. – С. 281-290.