GENERAL PROTEASE INHIBITORS STABILIZE ALBUMIN MICROPARTICLE AS THE POTENTIAL CARRIERS OF PROMEDICINES

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Albumin is supporting the osmotic pressure in blood. This plasma protein is able to carry medicines such as warfarin, ibuprofen, chlorpromazine, and naproxen, copper, zinc, and calcium ions. Binding of the compounds to albumin, changes their targeting effects as well as the circulation time. Consequently, albumin might serve as an affective carrier for the prolongation of the medicines' circulation time.

In our current work we prepared the albumin based biological microcarriers as it was presented in our previous publication (Aganyants H, Danielyan K; International Nano Letters, 2016), which were placed to the trypsinolysis, mimicking the blood protease-rich environment. Also, the protein based microcarriers structure was containing the general inhibitors of the proteases.

The polymerization of the albumin was performed with two aldehydes: formaldehyde as well as the glutaraldehyde. The best aldehyde, initiating the effective polymerization was chosen. In 72 hours it was measured the lysis by the spectrophotometric methods (Cary 60, Agilent, USA). Also, by the contrast phase microscope there were taken the pictures, which were analyzed for the particle count. The statistical analyses were performed by ONE-WAY-ANOVA as well as t-student test.

Inhibitors in the structure of the nanoparticles might prevent lysis process. The particles are more stable in ethanol vs water environment. Development of the albumin nanoparticles with the prolonged time of circulation is proposed.

Key words: Albumin microparticles, inhibitors, proteases, lyses