

# Nanochemistry and Nanobiotechnology

## Dextran - polyacrilamide based nanoparticles as the vectors for targeted delivery of medicaments into tumor cells

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Drug targeting to specific organs and tissues is one of the crucial endeavors of modern pharmacotherapy. Controlled targeting at the site of action and reduced time of exposure at non-targeting tissues increase efficacy of treatment and reduce toxicity and side effects, improving compliance and convenience.

Two major prerequisites must be taken into account: biocompatibility of nanoparticles and ways of effective incorporation into cells. Nanoparticles on base of dextran-polyacrylamide [1, 2] were characterized and tested in our experiments on J 774 cultured cells which possess phagocytic activity. It was shown that these nanoparticles are actively captured by phagocytic cells, aren't cytotoxic (90% ± 2% live cells at 0,01 mkg/ml). At the same time nanoparticles loaded with cisplatinum at different concentrations from 0,01 to 0,1 mkd/ml gave the percent of living cells from 28% to 76%. For more detailed revealing of pathways incorporation and detection of its effectiveness we developed method of nanoparticles impregnation with FITC. Further, the most optimal constructions with nanoparticles will be tested on animal models as well as on patient cells.

1. Kutsevol N., Bezugla T., Bezuglyi M., Rawiso M. Branched Dextran-graft-Polyacrylamide Copolymers as Perspective Materials for Nanotechnology // Macromol. Symp. – 2012. - 317-318.- P.82-90.
2. Kutsevol N., Bezuglyi M., Bezugla T., Rawiso M. Star-Like Dextran-graft-(polyacrylamide-co-polyacrylic acid) // Macromol. Symp. – 2014. – 335.- P.12-16.