

Synthesis of drug containing nanoparticles

Gyógyszer hatóanyagot tartalmazó nanorészecskék előállítása

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Summary

Our goal is to prepare and investigate multifunctional nanoparticles which can effectively carry different target molecules, e.g. drug molecules. Various drug carrier nanoparticles have been synthesized and followed by comparing their properties in the framework of our project. The carrier molecules of multifunctional nanoparticles used by us were poly(amidoamin) (PAMAM) dendrimers, functionalized magnetic nanoparticles, hyperbranched polymers, etc. These nanoparticles can carry numerous molecules binding them by strong chemical bonds on the surface of the carrier. Multifunctional nanoparticles may contain numerous, even three-four different molecules with different functions. These molecules can be used as pharmaceutical drugs, sensor molecules (e.g., fluorescent molecules or MRI contrast agents) or target molecules which recognize specific biological patterns (e.g., antibodies or folic acid), etc. Multifunctional nanoparticles in medicine can be utilized as targeted therapeutic and/or diagnostic agents, e.g., folate molecules conjugated to drug containing PAMAM dendrimer can recognize specifically some types of cancer diseases. Dendrimer carrier with the bound anticancer drug and cancer cell recognizing molecule, e.g. folic acid, finds and enters the cancer cell and destroys it [1]. The detection of the cells can also be realized by folic acid containing carrier molecules containing MRI agents conjugated with e.g., gadolinium-DOTA complex [2]. Synthesis and experimental investigations of single enzyme nanoparticles with different polymers and magnetic nanoparticles were also studied. This investigation is connected to our previous works with the aim to enhance the enzyme stability and to insure the repeated use of the immobilized enzyme.

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Literature

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