Abstract

Cancer is one of the most serious problems, which modern medicine faces. In recent years, nanotechnologies and their use in medicine, has developed greatly. The aim is to make drug administration more effective and help to improve treatment of cancer illnesses. Incorporation of chemical substance into a nanoparticle can solve the problem with low stability of the drug, and/or it help to eliminate side effects. Nanoparticle apoferritin, which was studied in this thesis, is a form of commonly occurring protein ferritin. Its structure contains cavity, that can be used for incorporation of drug. Its chemical structure (high temperature stability and stability at wide pH range, easy manipulation by changing pH) and its biocompatibility makes apoferritin a potentionally suitable transporter.

Presented thesis studied apoferritin‘s ability to incorporate anticancer drug cabozantinib into its structure. Cabozantinib is tyrosine kinase inhibitor which is used for treatment of thyroid cancer, renal cell carcinoma and hepatocellular carcinoma. The effect of final pH to the formation of the complex of apoferritin with cabozantinib, and stability of this complex was also studied in this thesis.

Considering the results we can say that apoferritin is able to encapsulate cabozantinib into its inner structure. As we see in results, final pH doesn’t affect this process. Considering stability results we can say that complex of apoferritin with encapsulated cabozantinib is not very stable and cabozantinib is released from complex.

[In Czech]

Keywords

cancer, nanoparticles, apoferritin, anticancer drugs, targeted therapy, cabozantinib