Charles University in Prague

Faculty of Science

Abstract

Name and surname: Mgr. Michaela Fojtů

Name of the thesis: Modulation of doxorubicin-induced toxicity using nanocarriers

In the clinical practice anthracycline antibiotic doxorubicin is a very potent and extensively prescribed chemotherapeutic agent. It is widely utilized in the therapy of variety haematological malignancies and solid tumors. Nonetheless, its administration is usually accompanied with several serve side effects. The most serious one is development of dose-dependent and cumulative cardiotoxicity which can be manifested even years after chemotherapy. Here were show that encapsulation of doxorubicin into nanocarriers represented in this study by apoferritin cages, or liposomal vesicles may help to overcome these limitations while simultaneously maintain the anticancer efficiency of the drug. Moreover, loading of chemotherapeutics inside the nanocarriers cavity, or binding of these drugs on their surface appeared as an effective approach offering solutions for many limitations associated with current cancer treatment, prolonging the drug circulation half-life, or increasing the accumulation of chemotherapeutics in the tumor tissue.