ABSTRACT

Charles University

Faculty of Pharmacy in Hradec Králové

Department of Biochemical Sciences

Candidate: Lucia Tomášková

Supervisor: prof. PharmDr. Tomáš Šimůnek, Ph.D.

Title of diploma thesis: Study of exosomes as a drug delivery system in the treatment of glioblastoma

Central nervous system disorders are among the most serious diseases affecting humans. They affect not only the patient's life, but also his/her surroundings. Therefore, their therapy, whether at the level of complete cure or alleviation of accompanying symptoms, is a challenge for scientific research. In our research, we focused on glioblastoma multiforme, a brain cancer not yet treatable. The main drawback in therapy is overcoming the blood-brain barrier. Exosomes, such as the body's natural nano-vesicles, have been shown to be a suitable system for delivering drugs to brain tissue. Our research has shown that by a suitable method we are able to obtain sufficient quality exosomes from macrophage and fill them very efficiently with antitumor agents paclitaxel, doxorubicin and temozolomide, while the delivered substances show higher efficacy and fewer side effects than the free form.