Abstract

The L1 and L2 capsid proteins of papillomaviruses are characterized by the ability to self-assemble into viral capsids, which can be divided into pseudovirions (PsVs) and virus-like particles (VLPs) by inner content. In addition to the fact that such particles can serve as "nano-containers" for diagnostic and therapeutic agents, it has also been shown that papillomaviruses, whether wild, PsVs or VLPs have a higher affinity for tumor tissue than non-tumor tissue. This thesis deals with relatively newly discovered (2011) mouse papillomavirus (MusPV) and nanoparticles derived from this virus. This papillomavirus has been chosen for its positives, including easy preparation of VLPs and PsVs, as well as an available model organism for possible testing. Furthermore, MusPV has the potential for use in gene therapy and cancer diagnosis, because there is no immune response in the human population. The aim of this diploma thesis is to prepare an expression system for the production of PsVs and VLPs. In additional it will also look at the quality and quantity of PsVs and VLPs, characterization of these particles and verification of existing postulates regarding higher affinity of papillomaviruses for tumor cells. Finally, it will also to verify whether the same effect is observed in MusPV.

In the results of this thesis we can observe a trend indicating preferential binding of PsVs and VLPs to tumor cell lines, as well as an increased degree of internalization of these particles.

Key words:

mouse papillomavirus, VLPs, PsVs, virus-like particles, pseudovirion