

Abstract

Capsid of mouse polyomavirus (MPyV) is composed from three structural proteins: major structural protein VP1 and minor structural proteins VP2 and VP3. Posttranslational modifications may affect functions of proteins. This work deals with acetylation of MPyV structural proteins and its impact on the viral replication cycle. First part of the thesis is focused on acetylation of VP1. We showed that the VP1 protein is acetylated in viral particles and that interaction of VP1 with minor proteins supports VP1 acetylation. Further, we showed that cytoplasmatic deacetylase, histone deacetylase 6 (HDAC6), is important for virus infectivity. Overexpression of HDAC6 decreased MPyV infectivity, also decreased infectivity was exhibited by virus isolated from HDAC6 knock out cells. In addition, VP1 protein of virus from HDAC6 knock out cells was more acetylated in comparison with virus from parental cell line. These data suggest that VP1 is substrate for HDAC6.

Second part of the thesis is focused on the characterization of N-terminal acetylation of VP3 minor structural protein. It has been previously shown that VP3 protein is N-terminally acetylated and MyPV with mutated (unacetylated) form of VP3 protein is non-infectious. The main aim of this part is to prove the hypothesis that N-terminal acetylation is important for stability of VP3 protein. Our preliminary results suggest that wild type (acetylated) VP3 is more stable than unacetylated form of VP3 protein.

Key words: Mouse polyomavirus, HDAC6, acetylation, structural proteins, posttranslational modifications