Abstract

MicroRNAs are small regulating molecules of RNA that are encoded by orgamism´s genome. Biogenesis of microRNA takes place partly in the nucleus and partly in the cytoplasm. Result of this biogenesis is a 22 nt long microRNA molecule. They are able to silence the genes thanks to sequence-specific degradation of a target mRNA or thanks to the repression of translation of target, complementary mRNA. In mammalian cells the mechanism of translational repression is more common. During this mechanism the microRNA molecule is not entirely complementary to 3´UTR of its target mRNA. Polyomaviruses are small, non-enveloped dsDNA viruses with a circular genome and icosahedral capsid composed of VP1 protein pentamers. These viruses belong in a group called onkoviruses, which can transform infected cells and contribute to development of serious illnesses such as Merkell cell carcinoma. Their genome encodes regulating proteins called T antigens, structural capsid proteins and also microRNAs. My main focus in this thesis will be SV40, MPyV, MCPyV, BKPyV and JCPyV encoded microRNA molecules.

Key words: polyomaviruses, small interfering RNA, microRNA, siRNA, RNA interference, mouse polyomavirus, BK virus, JC virus, SV40