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Murine gamma herpes virus – The newly discovered properties of MHV-68

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The murine γ-herpes virus 68 (MHV-68) known naturally infect rodents still actually provides a unique experimental model for dissecting important topics of human immunity to large DNA viruses that persist in B lymphocytes. Three scopes of interest related to MHV-68 are addressed by our laboratory and produce new knowledge about this virus. The first addresses the hypothesis that ticks, known to transmit multiple pathogens which can cause diseases in humans and animals, have a role in MHV-68 circulation in nature. The second is whether it is possible that MHV-68 might transform mouse cells *in vitro*. And the third addresses to the hypothesis that MHV-68 might induce the production of growth factor related compounds described for some herpes viruses. Recently, we were the first to report the detection of MHV-68 in *Dermacentorreticulatus* ticks and of a live virus in their organs. Along with previous finding of MHV-68 in *Ixodesricinus* ticks these results suggest MHV-68 as a potential arbovirus, the second one known as its own DNA genome. More, we prepared MHV-68 transformed mouse fibroblast cell line that acquired transformed phenotype after infection with UV irradiated MHV-68. In transformed cell line, viral antigen and DNA could be detected indicating that it might be oncogenic. In medium of these cells, we identified compounds resembling growth factors which have displayed transforming and transformed phenotype suppressing activity in normal and tumor cells. Bivalent properties of compounds have been blocked entirely by antisera against MHV-68 and monoclonal antibodies against glycoprotein B suggesting their viral origin. In this study, we investigated the medium of three cell lines transformed with MHV-68 *in vitro* and *in vivo*, 68/HDF, 68/NIH3T3 and S11E for the presence of compounds resembling growth factors of some herpes viruses which have displayed transforming and transformed phenotype suppressing activity in normal and tumor cells. When any of spent medium was added to cell culture we observed the onset of transformed phenotype in baby hamster kidney cells (BHK-21) cells and transformed phenotype suppressing activity in tumor human epithelial cells (HeLa). In media tested, we identified the presence of putative growth factor related to MHV-68 (MHGF-68). Its bivalent properties have been blocked entirely by antisera against MHV-68 and two monoclonal antibodies against gB of MHV-68 suggesting viral origin of MHGF-68. The results of initial efforts to separate MHGF-68 on FPLC Sephadex G15 column in the absence of salts revealed the loss of its transforming activity but transformed phenotype suppressing activity retained. On the other hand, the use of methanol-water mobile phase on RP-HPLC C18 column allowed separation of MHGF-68 to two compounds. In both separated fractions, we found only the transforming activity to normal cells. Further experiments exploring the nature and the structure of hitherto unknown MHGF-68 are now in the progress to characterize its molecular and biological properties.

Biography

Marcela Kudelova has completed her Postdoctoral studies from Comenius University and ScD thesis from Slovak Academy of Sciences. She is the Head of Department of Molecular Pathogenesis of Virology, Institute of Virology, Slovak Academy of Sciences, Slovak Republic. She has published more than 55 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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