
ABSTRACT

Cancer immunotherapy is concerned generally with the activation of cancer immunity specific for tumor antigens (TA) produced by cancer cells. My PhD thesis focused on the development of different types of cancer vaccines expressing various TA and predominantly on the determination of the efficacy of these vaccines. For studying TA-specific cancer cellular immunity in mice immunized with these vaccines, I used mainly the ELISPOT-IFN γ assay.

First, DNA, recombinant vaccinia virus (rVACV) and peptide vaccines against WT1 positive tumors were prepared. They consist of a fragment of WT1 protein with motifs predicted to bind to D^b murine MHC class I. The administration of peptide vaccines by tattoo delivery in combination with unmethylated CpG motifs and anti-TGF β monoclonal antibody was the most effective.

Next, I was interested in the immunotherapy of chronic myeloid leukemia (CML). Hruskova et al. prepared the mouse polyomavirus-like particles (MPyV-VLP) carrying the junction region of BCR-ABL fusion protein (1). In our laboratory, there were constructed the other types of CML vaccines with the expression of the junction region of BCR-ABL fusion protein, such as DNA or rVACV, too. Prepared vaccines failed to induce effective cancer immune response. It seems that BCR-ABL epitopes appeared to be a weakly immunogenic.

Finally, we were able to enhance the effectiveness of the rVACV vaccines against tumors expressing HPV16-E7 oncoprotein by co-expression of either soluble TGF β receptor II or Flt3 ligand.

Key words: WT1 protein, BCR-ABL protein, MPyV-VLP, rVACV, cancer vaccines

1. Hruskova, V., A. Moravkova, K. Babiarova, V. Ludvikova, J. Fric, V. Vonka, and J. Forstova. 2009. Bcr-Abl fusion sequences do not induce immune responses in mice when administered in mouse polyomavirus based virus-like particles. *Int.J.Oncol.* 35:1247-1256.