

Abstract

Tick-borne encephalitis is a serious disease of the central nervous system. It is caused by tick-borne encephalitis virus, which is transmitted by ticks. The Czech Republic is one of the countries with the highest prevalence of this disease. Tick-borne encephalitis virus is able to replicate in several cell types. In this work we focused on macrophage line IC-21 and dendritic cells, because these cells are the first, which encounter the virus and support its spreading in the host at early stage of infection. So far there is not known any specific receptor for virus entry into cells or which signaling pathways activates. Therefore, we decided to investigate the activation of selected signaling pathways after infection with tick-borne encephalitis virus and influence of tick saliva on this activation. We employed methods of dual luciferase reporter assay, immunosandwich assay and western blot. The obtained results showed that in virus infected IC-21 cells are activated phosphatidyl-inositol pathway, NF- κ B pathway, signaling molecule Erk1/2 and others. Testing of tick saliva effect revealed significantly decreased activity of NF- κ B, AP-1 and CREB.