

## **The gamma interferon (IFN-gamma) mimetic peptide IFN-gamma (95-133) prevents encephalomyocarditis virus infection both in tissue culture and in mice**

### **Abstract:**

We have demonstrated previously that the C-terminal gamma interferon (IFN-gamma) mimetic peptide consisting of residues 95 to 133 [IFN-gamma(95-133)], which contains the crucial IFN-gamma nuclear localization sequence (NLS), has antiviral activity in tissue culture. Here we evaluate the efficacy of this peptide and its derivatives first in vitro and then in an animal model of lethal viral infection with the encephalomyocarditis (EMC) virus. Deletion of the NLS region from the IFN-gamma mimetic peptide IFN-gamma(95-133) resulted in loss of antiviral activity. However, the NLS region does not have antiviral activity in itself. Replacing the NLS region of IFN-gamma(95-133) with the NLS region of the simian virus 40 large T antigen retains the antiviral activity in tissue culture. IFN-gamma(95-133) prevented EMC virus-induced lethality in mice in a dose-dependent manner compared to controls. Mice treated with IFN-gamma(95-133) had no or low EMC virus titers in their internal organs, whereas control mice had consistently high viral titers, especially in the heart tissues. Injection of B8R protein, which is encoded by poxviruses as a defense mechanism to neutralize host IFN-gamma, did not inhibit IFN-gamma(95-133) protection against a lethal dose of EMC virus, whereas mice treated with rat IFN-gamma were not protected. The data presented here show that the IFN-gamma mimetic peptide IFN-gamma(95-133) prevents EMC virus infection in vivo and in vitro and may have potential against other lethal viruses, such as the smallpox virus, which encodes the B8R protein.