Recombinant Vesicular Stomatitis Virus-expressing Interferon-beta

National Cancer Institute

Source

National Cancer Institute. Recombinant Vesicular Stomatitis Virus-expressing Interferon-beta. NCI Thesaurus. Code C102545.

A recombinant, replicating oncolytic vesicular stomatitis virus (VSV) carrying the human interferon-beta (IFN-b) gene, with potential immunomodulating and antineoplastic activities. Upon intratumoral administration, recombinant VSV expressing IFN-b replicates in the tumor environment specifically, partially due to defective innate antiviral host defense mechanisms in tumor cells, involving type I IFNs, and exerts its cytolytic activity towards the tumor cells. By expressing human IFN-b, an INF-b-mediated antiviral immune response in surrounding normal cells is activated which protects normal cells against virus replication and VSV-mediated cell lysis. However, tumor cells have a defective IFN-b-mediated innate antiviral immune response allowing for VSV to replicate in these cells without interference. In addition, the IFN-b produced by VSV may activate an immune response in surrounding normal cells and may activate T-lymphocytes, dendritic cells and natural killer cells; thus, inducing an anti-tumor immune response against the tumor cells. VSV, a single-stranded RNA virus belonging to the genus Vesiculovirus of the family Rhabdoviridae, is relatively nonpathogenic to healthy humans.