Abstract

For the development of safe live attenuated flavivirus vaccines one of the main properties to be established is viral replication. We have used real-time reverse transcriptase-polymerase chain reaction and virus titration by plaque assay to determine the replication of yellow fever 17DD virus (YFV 17DD) and recombinant yellow fever 17D viruses expressing envelope proteins of dengue virus serotypes 2 and 4 (17D-DENV-2 and 17D-DENV-4). Serum samples from rhesus monkeys inoculated with YFV 17DD and 17D-Dengue recombinant viruses by intracerebral or subcutaneous route were used to determine and compare the viremia induced by these viruses. Viral load quantification in samples from monkeys inoculated by either route with YFV 17DD and 17D-DENV chimeras by intracerebral or subcutaneous route were used to determine and compare the viremia induced by these viruses. Viral load quantification in samples from monkeys inoculated by either route with YFV 17DD virus suggested a restricted capability of the virus to replicate reaching not more than 2.0 log10 PFU mL-1 or 3.29 log10 copies mL-1. Recombinant 17D-dengue viruses were shown by plaquing and real-time PCR to be as attenuated as YF 17DD virus with the highest mean peak titer of 1.97 log10 PFU mL-1 or 3.53 log10 copies mL-1. These data serve as a comparative basis for the characterization of other 17D-based live attenuated candidate vaccines against other diseases.

Keywords

Yellow fever, dengue, vaccine, attenuation, replication, real-time RT-PCR.