# Impact of dengue virus (serotype DENV-2) infection on liver of BALB/c mice: a histopathological analysis

## ABSTRACT

In this research, we characterized the histopathological impact of dengue virus (serotype DENV-2) infection in livers of BALB/c mice. The mice were infected with different doses of DENV-2 via intraperitoneal injection and liver tissues were processed for histological analyses and variation was documented. In the BALB/c mouse model, typical liver tissues showed regular hepatocyte architecture, with normal endothelial cells surrounding sinusoid capillary. Based on histopathological observations, the liver sections of BALB/c mice infected by DENV-2 exhibited a loss of cell integrity, with a widening of the sinusoidal spaces. There were marked increases in the infiltration of mononuclear cells. The areas of hemorrhage and micro- and macrovesicular steatosis were noted. Necrosis and apoptosis were abundantly present. The hallmark of viral infection, i.e., cytopathic effects, included intracellular edema and vacuole formation, cumulatively led to sinusoidal and lobular collapse in the liver. The histopathological studies on autopsy specimens of fatal human DENV cases are important to shed light on tissue damage for preventive and treatment modalities, in order to manage future DENV infections. In this framework, the method present here on BALB/c mouse model may be used to study not only the effects of infections by other DENV serotypes, but also to investigate the effects of novel drugs, such as recently developed nano-formulations, and the relative recovery ability with intact immune functions of host.

**Keyword:** Arbovirus; Dengue fever; Histopathology; BALB/c mice model