

ABSTRACT

Dengue is an arboviral disease with four distinct serotypes, infecting millions of people in tropical/subtropical areas of the world. There is no proper vaccine nor drug available against dengue infections. Novel molecule/substances are needed to explore from the natural sources to inhibit dengue viruses in human body. Various medicinal plants and plant-based preparations have been used to treat different viral infections with minimum side effects. Current study explores the inhibitory potential of methanolic extracts of *Averrhoa carambola* (star fruit), *Ocimum sanctum* (tulsi) and *Swertia chirata* (chirata) against dengue virus serotype 2 (DENV-2) using primary mouse hepatocytes. Cells were freshly isolated following liver perfusion method. Primary mouse hepatocytes were cultured and cytotoxicity of these methanolic extracts were checked by neutral red uptake assay to find out the non toxic concentrations at which cells were able to maintain their normal morphology. The percentage of viral inhibition by these plants extracts was checked on mouse primary hepatocytes and measured by plaque reduction assay. Methanolic extracts of *A. carambola* and *S. chirata* showed greater cytotoxicity to the cells while *O. sanctum* was able to maintain the normal morphology of mouse hepatocytes without causing much mortality of cells. 80% cell survival was observed at 0.20, 1.5 and 0.60 mg/ml for *A. carambola*, *O. sanctum* and *S. chirata* leaves extracts respectively. However 50% cell survival was observed for the same extracts against 0.60, 4.0 and 1.80 mg/ml respectively. Extracts of *A. carambola* and *S. chirata* showed greater efficacy to inhibit DENV-2 where 26 and 38% inhibition was observed at 0.20 and 0.60 mg/ml respectively. Whereas, *O. sanctum* leaves extract caused 23.7% inhibition of DENV-2 at 1.5 mg/ml. In conclusion methanolic leaves extracts of *A. carambola* and *S. chirata* indicated greater potential against DENV-2 as compared to *O. sanctum* extracts. The study suggests *S. chirata* and *A. carambola* have significant inhibitory potential to reduce DENV-2. Both of these plants are worth to be further investigated for their integrated effect against dengue viruses that might pave a possible path towards the development of anti-DENV drug.