ABSTRACT

Dengue viruses infect millions of people worldwide in tropical and subtropical
areas. There is no vaccine or antidengue drug available for treatment of this disease.
Medicinal plant extracts containing various compounds and their derivatives have been
used for the development of antiviral drugs because of their least harmful effects and high
inconvenience in nature. Current study involves Screening of various medicinal plants for
anti-dengue activities that is strategy in order to find the potent therapeutic compounds.
Methanolic extracts of leaves of local medicinal plants Olea ferruginea, Azadirachta
indica and Cymbopogon citratus was used to investigate their antiviral activity against
Dengue virus type 2 in mouse hepatocyte cell line in vitro. Mouse primary 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 measured by plaque formation assay in vitro.
Methanolic extracts of O. ferruginea and C. citratus leaves were less toxic as compare to A.
indica extract. The latter was able to maintain the normal morphology of DENV-2 infected
mouse hepatocytes without causing much mortality of cells. Cell survival 80-100% was
observed against 0.06, 0.15 and 0.08mg/ml for O. ferruginea, A. indica and C. citratus
extract respectively. However 50% cell survival was observed for the same extracts against
0.40, 0.80 and 0.40mg/ml respectively. Methanolic extract of O. ferruginea was most
effective to inhibit DENV-2 where 43.55% inhibition was observed against 0.08mg/ml
whereas A. indica and C. citratus leaves extracts caused 42.62% and 38.71% inhibition of
DENV-2 against 0.15mg/ml and 0.08mg/ml respectively. Plaque forming unit (PFU/ml)
calculated for each extract at its highest concentration at which 100% cell survival takes
place was $1.1 \times 10^6$ PFU/ml for O. ferruginea and A. indica while $1.2 \times 10^6$ PFU/ml for C.
citratus leaves extracts, respectively. In conclusion methanolic fruit extract of O.
ferruginea indicated high potential for inhibition of DENV-2 as compare to other two of
extracts. However further separation of active compound from this fruit extract should be
investigated.