

## Inhibitory Action of *Boesenbergia rotunda* Plant Extracts Towards Dengue Virus Type-2 (DEN2) Protease Activity *in vitro*

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In the realms of viral diseases concerning human health, dengue fever is the most significant re-emerging disease in urban areas being mediated through a mosquito vector, *Aedes aegypti*. The complex circulation of the dengue virus which is mostly due to its existence as four serotypes (dengue-1 to 4) renders difficulty in producing a vaccine effective in preventing the viral infection. Hence, many research groups nowadays are progressively searching for antiviral agents against the dengue virus. In the present study, we described the inhibitory activity exerted by *Boesenbergia rotunda* plant extracts on dengue virus type-2 (DEN2) replication *in vitro*. Through initial screening assay using fluorogenic peptides which targeted the NS2B/NS3 protease complex, we have identified a competitive inhibitor, 4-hydroxypanpuratin which is a cyclohexenyl chalcone derivative of the plant.

*In vitro* antiviral activity of methanol crude *Boesenbergia R.* extract and 4-hydroxypanpuratin assessed in HepG2 (human liver) cells employing virus inhibition assay showed high inhibition activity in a dose dependent manner. Both crude and compound at their maximum non-toxic dose of 5 and 18 µg/ml respectively exhibited complete inhibition of 100% in cells infected with DEN2 at TCID<sub>50</sub> 10-1000 as indicated by the absence of cytopathic effects. Similar *in vitro* inhibition assay carried out in C6/36 (*Aedes albopictus*, NGC strain) cells showed low relative inhibition. Both crude extract and compound at its maximum non-toxic dose (5 and 8 µg/ml respectively) were only capable of inhibiting DEN2 virus activity at a lower virus titer (TCID<sub>50</sub> 1-10). Further work which involves cells transfection and quantitative RT-PCR are being carried out to substantiate the mechanism underlying the antiviral activity exerted by the plant extracts.