

Thesis Title Activities of Extracts from Thai Medicinal Plants, *Centella asiatica* Linn., *Mangifera indica* Linn. and *Cudrania javanensis* Frec., against Herpes Simplex Virus Type 2

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ABSTRACT

Many antiviral agents originated from synthetic compounds have been used to treat herpes simplex virus (HSV) infection. Although they are effective, the cost of treatment is always high and adverse effect may be encountered. Thus, an attempt to search for new agents from Thai medicinal plants recommended in primary health care was performed in this study.

Anti-HSV-2 activity was revealed from three Thai medicinal plants, i.e an aerial parts of *Centella asiatica* L. , leaves of *Mangifera indica* L. and wood of *Cudrania javanensis* F. as determined by observation on an inhibition of virus growth *in vitro*. In the present studies, the crude water extract of these medicinal plants at their highest, yet non-toxic concentration, could inhibit HSV-2 replication. They could reduce viral yields by more than 95% as observed at 30 hours after viral infection. The crude water extracts of *Centella asiatica* L. and *Mangifera indica* L. were further purified and investigated for active ingredients that possessed anti-HSV activities. Asiaticoside and mangiferin were found to be the active ingredients derived from *Centella asiatica* L. and *Mangifera indica* L., respectively. However, these

active ingredients might not exert anti-HSV-2 activity in a degree greater than the crude water extracts. Both the crude water extracts and their fractions containing active ingredients could reduce the cytopathic effects of infected cells. The combined activity resulting in an additive interaction was noted when each of the crude water extracts was mixed with acyclovir (ACV) and when crude *Centella asiatica* L. was mixed with *Mangifera indica* L. extract, indicating a different mode of action. The application of drug combination might reduce the incidence of emergence of resistance to a single drug.

The activities of these three crude water extracts were also demonstrated by inhibition of antigen synthesis in HSV-infected cells; a lower fluorescence intensity associated infected cells grown in the presence of the extracts was characterized by flow cytometer. At the concentration used, anti-HSV-2 activity of *Mangifera indica* L. was the same as *Cudrania javanensis* F. whereas that of *Centella asiatica* L. was the same as ACV at 1.5 µg/ml.

Thus, the application of crude water extracts derived from the aerial part of *Centella asiatica* L. and leaves of *Mangifera indica* L. for treatment of HSV infection may be recommended in order to reduce the expense of imported drugs and to promote self-reliance in drug supplies and primary health care in the population at large.