

## **Synergistic action of compounds isolated from the hexane extract of *Ardisia crispa* root against tumour-promoting effect, in vitro**

### **ABSTRACT**

An isomeric mixture of  $\beta$ -amyirin (triterpene) and 2-methoxy-6-undecyl-1,4-benzoquinone (quinone) isolated from the *Ardisia crispa* root hexane (ACRH) extract was reported to possess anti-inflammatory properties in vivo. Considering the close association between inflammation and cancer, on top of the lack of antitumour study on those compounds, this study aimed to determine the potential of both compounds against tumour promotion in vitro, either as single agent or in combination. Triterpene and quinone compounds, as well as triterpene-quinone fraction (TQF) and ACRH were subjected to inhibition of Epstein-Barr virus-early antigen (EBV-EA) activation assay for that purpose. Compared with curcumin (positive control), inhibition against EBV-EA activation occurred in the order: ACRH > TQF  $\times$  curcumin >  $\beta$ -amyirin  $\times$  2-methoxy-6-undecyl-1,4-benzoquinone. These findings reported, for the first time, the antitumor-promoting effect of  $\beta$ -amyirin and 2-methoxy-6-undecyl-1,4-benzoquinone from the roots of *A. crispa*, which was enhanced when both compounds act in synergy.

**Keyword:** *Ardisia crispa*; Inflammation; Antitumour promoting; Inhibition of EBV-EA activation assay