

Ardisia crispa roots inhibit cyclooxygenase and suppress angiogenesis

ABSTRACT

Background: In our previous studies conducted on *Ardisia crispa* roots, it was shown that *Ardisia crispa* root inhibited inflammation-induced angiogenesis in vivo. The present study was conducted to identify whether the anti-angiogenic properties of *Ardisia crispa* roots was partly due to either cyclooxygenase (COX) or/and lipoxygenase (LOX) activity inhibition in separate in vitro studies. **Methods:** Benzoquinonoid fraction (BQ) was isolated from hexane extract by column chromatography, and later analyzed by using gas chromatography–mass spectrometry (GC-MS). Anti-angiogenic effect was studied on mouse sponge implantation assay. *Ardisia crispa* ethanolic rich fraction (ACRH), quinone-rich fraction (QRF) and BQ were screened for COX assay to evaluate their selectivity towards two isoforms (COX-1 and COX-2), The experiment on soy lipoxygenase (LOX) inhibitory assay was also performed to determine the inhibitory effect of ACRH, QRF and BQ on soy LOX. **Results:** BQ was confirmed to consist of 2-methoxy-6-undecyl-1,4-benzoquinone, when compared with previous data. Antiangiogenesis study exhibited a reduction of mean vascular density (MVD) in both ACRH and QRF, compared to control. In vitro study showed that both ACRH and QRF inhibited both COX-1 and COX-2, despite COX-2 inhibition being slightly higher than COX-1 in BQ. On the other hand, both ACRH and QRF were shown to have poor LOX inhibitory activity, but not BQ. **Conclusions:** In conclusion, ACRH and QRF might possibly exhibit its anti-angiogenic effect by inhibiting cyclooxygenase. However, both of them were shown to possess poor LOX inhibitory activity. On the other hand, BQ displayed selectivity to COX-2 inhibitory property as well as LOX inhibitory effect.

Keyword: *Ardisia crispa*; COX inhibitor; LOX inhibitor; Soy lipoxygenase assay