

Preventive effect of alpinate oxyphyllae fructus (*alpinia oxyphylla* miq) extracts on Ang II -induced cardiac pathological hypertrophy in H9c2 cardiomyoblast cells

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Background: Angiotensin II (Ang II) is a very important inducer of cardiovascular disease and may cause cardiac pathological hypertrophy and remodeling. We used a valued Chinese traditional medicine, alpinate oxyphyllae fructus (AOF), to evaluate its therapeutic effect on Ang II-induced cardiac hypertrophy. AOF has been reported that it might be a neuroprotective agent. Moreover, AOF has been used to treat the patients whose have various symptoms accompanying hypertension and cerebrovascular disorders in Korea. But few studies investigated whether it could be a candidate for the prevention of cardiac hypertrophy in hypertension.

Objective: In the present study, we first investigated its protective effect against Ang II-induced cyto-skeletal change and hypertrophy in H9c2 cells.

Methods: Alpinate Oxyphyllae Fructus fragment was extracted with 600 ml of boiling water for 2 h. We evaluated the preventive effect of AOF on H9c2 cells.

Results: The results showed that treating cells with Ang II resulted in pathological hypertrophy, such as increase the expressions of transcription factors NFAT-3/ p-NFAT-3, hypertrophic response genes (ANP and BNP) and $G\alpha_q$ down-stream effectors (PLC β 3 and calcineurin). Pretreatment with AOF (60-100 μ g/ml) led to a significantly reduction in hypertrophy. We also found that AOF pretreatment significantly suppressed the cardiac remodeling proteins, metalloproteinase (MMP9 and MMP2) and plasminogen activator (tPA), which induced by Ang II challenge.

Conclusion: In conclusion, we provide evidence that AOF protects against Ang II -induced pathological hypertrophy by specifically inhibiting the IGF- II / IIR related signaling pathway in H9c2 cell. Although we haven't found out the single effective extract from water extracts of AOF. Nevertheless, AOF might be a candidate for prevention cardiac hypertrophy and ventricular remodeling in chronic cardiovascular diseases.

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