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Direct Thrombin Inhibition by 2α-hydroxy-oleanolic acid Isolated from *Syzygium aromaticum*

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The importance of thrombosis in cardiovascular disorders pushed the researcher to search for better antithrombotic agents. We have previously reported a direct thrombin inhibitory activity of plant extracts, prepared from more than 500 kinds of medicinal and edible plants. In this study, the direct and strong thrombin inhibition activity of dried flower extract of *Syzygium aromaticum* was investigated. The active compound in the extract of *S. aromaticum* was purified by methanol extraction, sequential organic solvent fractionation and silica-gel chromatography, and identified as 2α-hydroxy-oleanolic acid. The 2α-hydroxy-oleanolic acid showed extended thrombin time above 2,000% at concentration of 0.5 mg/ml, and the activity was maintained by treatment of heat (100℃ for 2h), or acid (0.01 M HCl for 2 h), and serum (37℃ for 2h). Interestingly, oleanolic acid as well as other triterpenoids did not show apparent thrombin inhibition activity at concentration up to 1 mg/L. Out result suggest that the production of a safe and effective antithrombosis agent is possible from edible plants, or by chemical synthesis from oleanolic acid.