Alkaloids from Nauclea orientalis Inhibited in vitro ADP and Thrombin Induced Human Platelet Aggregation / Sinchai Chaikham, Jakkrit Buatana, Mattawan Meethangdee, Jarinya Luang-apirom, Napatjaree Sopin, Kitipong Jantabut, Chiraphat Kloypan, Serm Surapinit, Nuttakom Baisaeng

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Abstrak

A series of alkaloids isolated from the roots of N. orientalis is investigated for the inhibitory activities on in vitro agonists induced human platelet aggregation. Human platelet samples were obtained to investigate the anti-platelet activity by high throughput 96-well microtiter plate format. Adenosine diphosphate (ADP), arachidonic acid (AA), thrombin and thrombin receptor activating peptide-6 (TRAP-6) were used as agonists for in vitro human platelet aggregation. All alkaloids were inactive in the AA induced platelet aggregation. Compound 2 was the only alkaloid to inhibit ADP induced platelet aggregation with the IC50 value of 27.01 ± 7.67 pM and was more potent than the standard drug, ibuprofen ($p < 0.05$). The compounds 1, 3, 4, 5 and 7 were more potent than the standard drug to inhibit thrombin induced platelet aggregation with the IC50 values of 3.05 ± 0.22,4.41 ± 0.47,7.50 ± 0.22,45.69 ± 1.74 and 4.89 ±0.13 pM ($p < 0.05$), respectively. None of the potent alkaloids in thrombin- mediated platelet aggregation exhibited the inhibitory effect in TRAP-6 induced platelet aggregation. Compound 2 could inhibit platelet aggregation through the interference of platelet purinergic receptors (P2Y1 and P2Y12 receptors). Moreover, compounds 1, 3,4, 5 and 7 could have inhibitory effects on thrombin-induced platelet aggregation through the proteolytic inhibition without the interferences of ligand-receptor interaction.