

## ABSTRACT

Platelet activation in atherosclerotic arteries usually triggers arterial thrombosis. Precise control of platelet function is required to prevent cardiovascular disease. However, several antiplatelet therapies, such as aspirin showed signs of side effects and recurrence of vascular disease. Therefore, research on antiplatelet agents from natural materials is highly needed. Leaves of breadfruit (*Artocarpus altilis* (Park.) Fosberg) contains flavonoid compounds that inhibits platelet aggregation, so it has a potential to be used as an antiplatelet agent.

In this study, ethanolic extracts of breadfruit leaves (EDS) was tested on its activity through the inhibition of platelet aggregation induced by epinephrine using turbidimetry method and the tool used was *Light Transmission Aggregometry* (LTA). EDS was subjected to *Platelet-Rich Plasma* (PRP) induced by epinephrine. Percentage of aggregation was measured based on the change of transmittance recorded by the detector, while the percentage of inhibition was calculated relative to *Dimethyl Sulfoxide* (DMSO). Yohimbine hydrochloride as antagonist receptor alpha 2-adrenergic receptor was used as positive control. Data on percent aggregation was statistically analyzed with ANOVA and data on percent inhibition was used to find the IC50 value.

The results showed that treatment of EDS has inhibitory activity of platelet aggregation that statistically significant compared to the negative control. EDS concentration of 750  $\mu\text{g/mL}$  has a platelet aggregation inhibition of  $93,10 \pm 4,56\%$ , slightly lower than 10  $\mu\text{M}$  yohimbine hydrochloride, which has a value of  $93,94 \pm 1,52\%$ . The test results showed that the antiplatelet activity of EDS concentration series of 750, 500, 250, 200, and 150  $\mu\text{g/mL}$  have antiplatelet activity with IC50 value of  $254.13 \pm 7.92 \mu\text{g} / \text{mL}$ .

Key words : antiplatelet, extracts of breadfruit leaves, epinephrine, yohimbine

## INTISARI

Aktivasi platelet pada pembuluh arteri menjadi pemicu terjadinya trombosis arteri. Kontrol terhadap fungsi platelet tersebut diperlukan untuk menghindari terjadinya penyakit kardiovaskuler. Akan tetapi, beberapa terapi antiplatelet, seperti aspirin menunjukkan adanya efek samping serta kekambuhan penyakit vaskuler. Oleh sebab itu, diperlukan pengembangan agen antiplatelet dari bahan alam. Daun sukun (*Artocarpus altilis* (Park.) Fosberg) mengandung senyawa flavonoid yang berfungsi menghambat agregasi platelet, sehingga berpotensi sebagai agen antiplatelet.

Dalam penelitian ini, ekstrak etanolik daun sukun (EDS) diuji aktivitasnya melalui penghambatan agregasi platelet yang diinduksi epinefrin menggunakan metode turbidimetri dengan alat *Light Transmission Aggregometry* (LTA). EDS dipaparkan pada *Platelet-Rich Plasma* (PRP) yang diinduksi oleh epinefrin. Persentase agregasi diukur berdasarkan perubahan transmitansi yang ditangkap oleh detektor, sedangkan persentase inhibisi dihitung relatif terhadap DMSO. Digunakan kontrol positif yohimbin hidroklorida sebagai antagonis reseptor alfa 2-adrenergik. Data persen agregasi dianalisis secara statistik dengan ANOVA dan data persen inhibisi digunakan untuk mencari nilai  $IC_{50}$ .

Hasil penelitian menunjukkan bahwa perlakuan EDS memiliki aktivitas penghambatan agregasi platelet yang secara statistik berbeda bermakna dibanding kontrol negatif. Konsentrasi EDS 750  $\mu\text{g/mL}$  memiliki daya penghambatan agregasi platelet sebesar  $93,10 \pm 4,56\%$ , sedikit lebih rendah dibandingkan yohimbin hidroklorida 10  $\mu\text{M}$ , yaitu sebesar  $93,94 \pm 1,52\%$ . Hasil uji aktivitas antiplatelet menunjukkan bahwa EDS dengan seri konsentrasi 750, 500, 250, 200, dan 150  $\mu\text{g/mL}$  memiliki aktivitas antiplatelet dengan nilai  $IC_{50}$  sebesar  $254,13 \pm 7,92 \mu\text{g/mL}$ .

Kata kunci : antiplatelet, ekstrak daun sukun, epinefrin, yohimbin