UJI AKTIVITAS ANTIPLATELET DAN ANTITROMBOSIS DARI KULIT BATANG KAYU SINTOK (*Cinnamomum sintoc* BLUME)

Intisari

Salah satu penyebab beberapa penyakit kardiovaskuler, seperti strok, iskemia dan infark miokardia, adalah adanya sumbatan pada pembuluh kapiler darah yang diperantarai agregasi platelet dan reaksi aterotrombosis. Obat-obatan antitrombosis yang bekerja dengan bermacam mekanisme dan pada bermacam tahapan trombosis masih memiliki keterbatasan di antaranya obat tersebut hanya bekerja pada satu reseptor saja sementara proses trombosis melibatkan banyak faktor dan reseptor. Ekstrak metanolik kayu sintok (EMKS) dan beberapa senyawa derivat fenilpropan dari genus *Cinnamomum* dilaporkan memiliki aktivitas antiplatelet yang potensial. Penelitian ini bertujuan untuk mengetahui aktivitas EMKS dalam menghambat agregasi platelet secara *in vitro* dan trombosis secara *in vivo.*

Aktivitas antiplatelet EMKS (1, 5, 10, 50, 100, 200 µg/mL) dilakukan dengan mengukur persen agregasi platelet dalam *Platelet Rich Plasma* (PRP) darah manusia setelah diinduksi dengan adenosin difosfat (ADP) atau epinefrin. Ticagrelor (1,0 µM) dan Yohimbin HCl (1,0 µM) sebagai kontrol pembanding. Uji antitrombosis *in vivo* dilakukan dengan mengukur jumlah kematian dan pembentukan trombus pada kapiler paru mencit setelah diinduksi trombosis dengan campuran kolagen (6 mg/kgBB) dan epinefrin (0,072 mg/kgBB), dengan sebelumnya hewan uji dipejani EMKS (100, 400, 600 mg/kgBB) secara peroral. Ticagrelor (11,7 mg/kgBB) digunakan sebagai kontrol pembanding.

Hasil penelitian menunjukkan EMKS mampu menghambat agregasi platelet yang diinduksi ADP dengan EC_{50} sebesar (96,0 ± 10,5) µg/mL dan untuk epinefrin EC_{50} sebesar (117,9 ± 8,8) µg/mL pada manusia berdasarkan uji antiplatelet *in vitro*. Diperkirakan senyawa aktif antiplatelet dalam EMKS adalah senyawa golongan tanin. EMKS pada dosis rendah sampai tinggi (100, 400, 600 mg/kgBB) tidak mampu memberikan proteksi yang signifikan ($p > 0,05$) terhadap reaksi trombosis berdasarkan uji antitrombosis *in vivo* pada mencit.

Kata kunci: antiplatelet, antitrombosis, *Cinnamomum sintoc*

ANTIPLATELET AND ANTITHROMBOSIS ACTIVITY TEST FROM BARK OF *Cinnamomum sintoc* BLUME

Abstract

One of the causes of some cardiovascular diseases, i.e stroke, ischemia and miocardial infarc, is the presence of blockages in blood vessels mediated by platelet aggregation and atherotrombotic reactions. Antithrombosis drugs that work with multiple mechanisms and at different stages of thrombosis still have limitations such as those only work on one receptor while the thrombosis process involves many factors and receptors. *Cinnamomum sintoc* methanolic extract (CSME) and some phenylpropane derivatives of the *Cinnamomum* genus were reported to have potential antiplatelet activity. The purpose of this study was to determine the CSME activity in inhibiting platelet aggregation (in vitro) and thrombosis (in vivo).

CSME antiplatelet activity assay (1, 5, 10, 50, 100, 200 µg/mL) was performed by measuring the percent of platelet aggregation in human Platelet Rich Plasma (PRP) after induced by adenosine diphosphate (ADP) or epinephrine in a Light Transmitant Aggregometer. Ticagrelor (1.0 µM) and Yohimbin HCl (1.0 µM) were used as comparison. In vivo antithrombosis assay was performed by measuring the number of deaths and/or paralysis and thrombus formation in lung capillaries of Balb/c mice after induction of thrombosis with collagen (6 mg/kg BW) and epinephrine (0.072 mg/kg BW) mixture, with animals previously administered with CSME (100, 400, 600 mg/kg BW) orally. The activity was compared to Ticagrelor (11.7 mg/kg BW).

The results showed that CSME was able to inhibit platelet aggregation induced by ADP or epinephrin with EC_{50} values (96.0 ± 10.5) µg/mL and (117.9 ± 8.8) µg/mL respectively to human based on in in vitro antiplatelet test. It was estimated that the antiplatelet active compound in CSME is a tannin class compound. CSME at low to high doses (100, 400, 600 mg/kg BW) were unable to provide significant protection ($p > 0.05$) to thrombosis reactions based on in vivo antitrombosis test on mouse.

Keywords: antiplatelet, antithrombosis, *Cinnamomum sintoc*