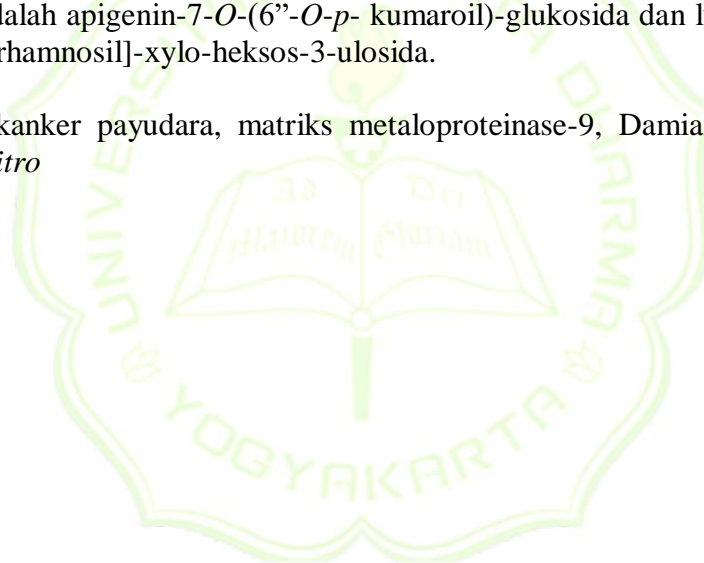


ABSTRAK

Enzim matriks metaloproteinase-9 (MMP-9) berperan penting dalam perkembangan kanker payudara *triple negative* karena ekspresi berlebih enzim tersebut dapat meningkatkan laju angiogenesis dan metastasis sel kanker. Salah satu permasalahan kompleks terapi kanker payudara yaitu kurangnya selektivitas obat terhadap target terapinya sehingga diperlukan penemuan baru berbasis bahan alam dengan memanfaatkan sumber daya sekitar untuk meningkatkan efektivitas dan keamanan terapi kanker payudara. Penelitian ini bertujuan untuk memfraksinasi daun damiana (*Turnera diffusa* Willd ex Schult.) dan mengidentifikasi senyawa-senyawa yang terkandung dalam fraksi *n*-heksana-etil asetat daun damiana yang diharapkan aktif menghambat enzim MMP-9 secara *in vitro*. Fraksinasi dilakukan menggunakan kromatografi kolom fase normal dengan fase gerak *n*-heksana-etil asetat (3:1). Uji *in vitro* enzim MMP-9 dilakukan menggunakan prinsip *fluorescence resonance energy transfer (FRET) based* MMP-9. Hasil uji *in vitro* menunjukkan persen penghambatan aktivitas enzim MMP-9 oleh fraksi 1 dari partisi *n*-heksana daun damiana sebesar 21% pada konsentrasi 1000 µg/mL. Senyawa yang teridentifikasi dalam fraksi 1 tersebut berdasarkan hasil GC-MS diperkirakan adalah apigenin-7-*O*-(6''-*O*-*p*-kumaroil)-glukosida dan luteolin-8-*C*-[6-deoksi-2-*O*-rhamnosil]-xylo-heksos-3-ulosida.

Kata Kunci: kanker payudara, matriks metaloproteinase-9, Damiana, *Turnera diffusa*, uji *in vitro*



ABSTRACT

Matrix Metalloproteinase-9 (MMP-9) plays a significant role in a triple negative breast cancer progression because its overexpression increases tumour cells angiogenesis and metastases. One of the complicated problems in the breast cancer therapy is the lack of selectivity against its molecular targets. Novel discoveries are required especially using natural products resources to increase its therapeutic effectiveness and safety. This study aims to fractionate damiana (Turnera diffusa Willd ex Schult.) leaves and identify its substances in n-hexane-ethyl acetate fractions that are expected to inhibit MMP-9 enzyme activity. Fractionation was carried out using a normal phase column chromatography with n-hexane-ethyl acetate (3:1) as the mobile phase. MMP-9 in vitro assay was carried out using a fluorescence resonance energy transfer (FRET)-based MMP-9. The assay showed that fraction 1 from n-hexane partition exhibited 21% reduction of MMP-9 enzyme activity at 1000 µg/mL. Compounds that were predicted in fraction 1 are apigenin-7-O-(6''-O-p-coumaroyl)-glucoside and luteolin-8-C-[6-deoxy-2-O-rhamnosyl]-xylo-hexos-3-uloside.

Keywords: *breast cancer, matrix metalloproteinase-9, Damiana, Turnera diffusa, in vitro assay*

