ABSTRAK

Kanker payudara menempati peringkat kedua di Asia, dengan 911.014 kasus baru dan 310.577 kematian pada tahun 2018. Matriks metaloproteinase-9 (MMP-9) merupakan enzim yang berperan dalam mendegradasi matriks ekstraselular (ECM) sehingga menyebabkan migrasi atau metastasis sel kanker payudara. Penelitian ini bertujuan untuk mengetahui efek antiproliferasi partisi *n*-heksana daun asoka (*Ixora coccinea* L.) terhadap sel kanker payudara T47D melalui penghambatan MMP-9 dan juga keamanannya terhadap sel Vero. Partisi diuji secara *in vitro* aktivitas penghambatannya terhadap enzim MMP-9 dengan metode FRET-*based assay*. Selain itu, terhadap sel T47D dan sel Vero dilakukan MTT *assay*. Partisi kemudian diidentifikasi kandungan kimianya dengan metode KG-SM. Secara *in vitro* diperoleh aktivitas penghambatan partisi terhadap MMP-9 sebesar 97% dengan nilai EC_{50} dan CC_{50} secara berturut-turut sebesar 1317,3 µg/mL dan 981,2 µg/mL (IK= 0,74). Berdasarkan profil KG-SM, diperoleh 3 senyawa dengan puncak tertinggi dengan waktu retensi 6,554; 15,574; dan 18,449 menit dengan rasio m/z berturut-turut sebesar 530; 550; dan 535. Menariknya, salah satu puncak tertinggi merupakan massa relatif yang sesuai dengan salah satu marker dalam *Ixora coccinea*, yaitu ixorapeptida II (MR 535). Kesimpulannya, sampel partisi aktif menghambat MMP-9, namun kurang aktif terhadap sel T47D yang mengindikasikan bahwa sampel partisi selektif terhadap kanker tipe triple negatif.

Kata kunci: MMP-9, T47D, *Ixora coccinea* L., MTT *assay*

ABSTRACT

Breast cancer ranked secondly in Asia, with 911.014 new cases and 310.577 deaths in 2018. Matrix metalloproteinase (MMP-9) is an enzyme which degrades extracellular matrix (ECM) and causes breast cancer metastasis. This study aimed to investigate the antiproliferative activity of *Ixora coccinea* L. *n*-hexane partition against T47D cell line through MMP-9 inhibiton and its cytotoxicity activity against Vero cell line. The inhibiton activity of partition was evaluated using FRET-based assay against MMP-9 and MTT assay against T47D as well as Vero cell lines. Also, the chemical substances in the partition were identified using Gas Chromatography-Mass Spectrometry (GC-MS) method. Using MTT assay, the partition exhibited 97% inhibition against MMP-9 with EC_{50} and CC_{50} values 1317,3 µg/mL and 981,2 µg/mL respectively (SI = 0.74). The GC-MS profile reveals 10 peaks including 3 major substances with retention time as follows 6,554; 15,547; and 18,449 minutes and the ratio m/z 530; 550; and 535, respectively. Interestingly, one peak was indicated as ixorapeptide II (MW 535) which is a marker compound in *Ixora coccinea* could be the compound having a responsibility toward MMP-9 inhibittion. The partition active inhibited MMP-9 but less active against T47D which concludes that the partition is selective to the triple negative cancer type.

Key words: MMP-9, T47D, *Ixora coccinea* L., MTT assay