

## INTISARI

Perkembangan kanker pada stadium lanjut ditandai dengan terjadinya metastasis yang memicu tingginya mortalitas akibat kanker payudara, terutama tipe HER2 positif. Temu kunci (*Boesenbergia pandurata*) diketahui memiliki aktivitas antikanker dan antimetastasis secara khusus, tetapi penelitian menggunakan pemodelan sel kanker payudara *over* ekspresi HER2 belum pernah dilakukan. Penelitian ini bertujuan untuk menelusuri potensi ekstrak temu kunci (ETK) sebagai agen antimetastasis pada sel kanker payudara MCF-7/HER2.

Karakterisasi kandungan ETK dilakukan dengan metode kromatografi lapis tipis. Aktivitas sitotoksik ETK terhadap sel MCF-7/HER2 dan penentuan kadar untuk uji selanjutnya dilakukan melalui metode MTT dengan parameter  $IC_{50}$ . Pengamatan potensi antimetastasis ETK ( $\pm 1/4 IC_{50}$ ) dilakukan melalui pengamatan pembentukan lamellipodia, *scratch wound healing assay* dengan parameter persen penutupan, dan *gelatin zymography* dengan parameter persen intensitas pita ekspresi MMP-2 dan MMP-9. Perlakuan doxorubicin (10 nM) dan kombinasinya dengan ETK juga dilakukan untuk mengetahui potensi ETK sebagai agen ko-kemoterapi antimetastasis.

Profil kromatogram menunjukkan ETK mengandung senyawa golongan flavonoid. Nilai  $IC_{50}$  yang diperoleh dari uji sitotoksik adalah  $23 \pm 3,9 \mu\text{g/mL}$ . Perlakuan ETK dengan kadar  $5 \mu\text{g/mL}$  menunjukkan penghambatan pembentukan lamellipodia, penurunan persen penutupan pada pengamatan 24 jam, dan penurunan persen intensitas pita ekspresi MMP-2 dan MMP-9. Dengan demikian, dapat disimpulkan bahwa ETK berpotensi untuk dikembangkan sebagai agen antimetastasis.

Kata kunci: Temu kunci (*Boesenbergia pandurata*), kanker payudara, metastasis, MCF-7/HER2.

## ABSTRACT

The development of cancer at an advanced stage is signed with metastasis that trigger the high of mortality caused breast cancer, possitive HER2 type mainly. Temu kunci (*Boesenbergia pandurata*) is knew to has anticancer activity and antimetastasis in particular, but research using over expression of HER2 breast cancer cell modeling has never been done. This study is intended to explore the potential of temu kunci extract (ETK) as an antimetastasis agent in MCF-7 / HER2 breast cancer cells.

Characterization of ETK content was done by thin layer chromatography method. The cytotoxic activity of ETK towards MCF-7 / HER2 cells and the determination of the concentration for further tests was done through MTT method with parameter of  $IC_{50}$ . The observation of ETK antimetastasis potential ( $\pm 1/4 IC_{50}$ ) was done through observation of lamellipodia formation, scratch wound healing assay with parameter of closure percent, and gelatin zymography with parameter of intensity percent of MMP-2 and MMP-9 expression band. Treatment of doxorubicin (10 nM) and its combination with ETK was also performed to determine the potential of ETK as an antimetastatic co-chemotherapy agent.

Chromatogram profile showed ETK that contains flavonoid group compounds.  $IC_{50}$  values obtained from the cytotoxic test were  $23 \pm 3.9 \mu\text{g} / \text{mL}$ . Treatment of ETK with concentration of  $5 \mu\text{g} / \text{mL}$  showed inhibition of lamellipodia formation, decreased closure percent at 24 hours observation, and decreased intensity percent of MMP-2 and MMP-9 expression bands. Thus, it can be concluded that ETK has the potential to be developed as an antimetastasis agent.

Keywords: Temu kunci (*Boesenbergia pandurata*), breast cancer, metastasis, MCF-7/HER2.