INTISARI

Kanker payudara menempati peringkat pertama angka kejadian kematian dalam lima tahun terkahir di Indonesia. Eksplorasi senyawa antikanker dari bahan alam termasuk mikroba dari laut terus dikembangkan. *Streptomyces* diketahui mampu menghasilkan metabolit sekunder dan memiliki potensi senyawa antikanker. Penelitian ini bertujuan untuk mengetahui potensi senyawa antikanker metabolit sekunder *Streptomyces* sp. GMY01 dengan analisis *genome mining* menggunakan antiSMASH 6.0, mengetahui efek sitotoksisitas dengan metode MTT *assay*, penghambatan siklus sel dan induksi apoptosis terhadap sel kanker payudara dengan metode *flow cytometry*, serta prediksi kandungan senyawa dalam ekstrak metabolit sekunder *Streptomyces* sp. GMY01 dengan metode LC-MS/MS. Hasil penelitian menunjukkan bahwa metabolit sekunder *Streptomyces* sp. GMY01 memiliki potensi senyawa antikanker berdasarkan *genome mining* dengan dominasi NRPS dan PKS. Ekstrak etil asetat memiliki efek sitotoksik paling kuat pada sel T47D (IC_{50} 9,51 µg/mL) dan MCF-7 (IC_{50} 22,28 µg/mL). Ekstrak etil asetat dapat menginduksi apoptosis dan mampu menghambat siklus sel. Kandungan dalam ekstrak etil asetat terdiri dari *propoxur* ($C_{11}H_{15}NO_3$), isobutiranilida ($C_{10}H_{13}NO$), dibenzalaseton ($C_{17}H_{18}O$), *mitomycin G* ($C_{15}H_{17}N_3O_3$), dan *amantadine* ($C_{10}H_{17}N$). Diharapkan dari penelitian ini dapat dikembangkan agen antikanker yang efektif untuk mengobati kanker payudara.

Kata kunci: kanker payudara, *Streptomyces*, antikanker, metabolit sekunder, mitomycin

ABSTRACT

Breast cancer ranks first in the incidence of death in the last five years in Indonesia. Exploration of anticancer compounds from natural materials including microbes from the sea continues to be developed. *Streptomyces* is known to be able to produce secondary metabolites and has potential anticancer compounds. This study aims to determine the potential anticancer compounds from secondary metabolites of *Streptomyces* sp. GMY01 with genome mining analysis using antiSMASH 6.0, knowing the effect of cytotoxicity by MTT assay method, cell cycle inhibition and apoptosis induction on breast cancer cells by flow cytometry method, as well as prediction of compound content in secondary metabolite extract of *Streptomyces* sp. GMY01 with LC-MS/MS method. The results showed that the secondary metabolites of *Streptomyces* sp. GMY01 has potential anticancer compounds based on genome mining with NRPS and PKS dominance. Ethyl acetate extract had the strongest cytotoxic effect on T47D cells (IC_{50} 9,51 µg/mL) and MCF-7 (IC_{50} 22,28 µg/mL). Ethyl acetate extract can induce apoptosis and is able to inhibit the cell cycle. The content in the ethyl acetate extract consists of propoxur ($C_{11}H_{15}NO_3$), isobutyranilide ($C_{10}H_{13}NO$), dibenzalacetone ($C_{17}H_{18}O$), mitomycin G ($C_{15}H_{17}N_3O_3$), and amantadine ($C_{10}H_{17}N$). It is hoped that from this research an effective anticancer agent can be developed to treat breast cancer.

Keywords: breast cancer, Streptomyces, anticancer, secondary metabolites, mitomycin