

INTISARI

Banyak penelitian terhadap endofit menghasilkan senyawa bioaktif yang bisa dikembangkan sebagai kandidat penemuan obat baru. Endofit diketahui mampu memproduksi senyawa biokatif yang dapat sama atau berbeda dengan tanaman inangnya. Berbagai faktor berpengaruh terhadap produksi metabolit sekunder endofit salah satunya cahaya. Cahaya pada kondisi fermentasi diketahui mempunyai pengaruh terhadap metabolit yang dihasilkan. Tujuan penelitian ini adalah untuk mengetahui pengaruh cahaya pada fermentasi fungi endofit *Arthrinium rasikravindrae* yang diisolasi dari batang tanaman jinten (*Coleus amboinicus*) terhadap profile metabolit sekunder dan bioaktivitasnya. Fungi endofit *A.rasikravindrae* ditumbuhkan dalam media Potato Dextrose Broth selama 14 hari pada kondisi gelap dan terang. Untuk mengetahui profil metabolit dilakukan TLC analysis dan GC-MS analysis, sedangkan pengujian bioaktivitas dilakukan dengan terhadap aktivitas sitotoksik (MTT Assay), antibakteri (Mikrodilusi) dan antioksidan (uji DPPH). Berdasarkan analisis GC-MS, terdapat senyawa yang ditemukan pada ekstrak batang tanaman jinten maupun ekstrak fungi endofit *A. rasikravindrae* pada kondisi gelap dan terang yaitu metil oktadek-9-enoat. Selain metil oktadek-9-enoat, terdapat metil palmitat yang juga ditemukan pada ekstrak fungi endofit kondisi fermentasi terang dan pada ekstrak batang tanaman. Skrining aktivitas antioksidan ekstrak pada kondisi fermentasi gelap menunjukkan IC_{50} sebesar $66.36 \pm 0.53 \mu\text{g/mL}$, lebih kecil jika dibandingkan dengan kondisi fermentasi terang IC_{50} sebesar $> 250 \mu\text{g/mL}$. Uji sitotoksik ekstrak pada kondisi terang lebih bersifat sitotoksik terhadap sel kanker WiDr ($IC_{50} 291.40 \pm 2.34 \mu\text{g/mL}$), T47D ($IC_{50} 336.80 \pm 5.05 \mu\text{g/mL}$), dan Hela ($IC_{50} 404.73 \pm 3.46 \mu\text{g/mL}$). Ekstrak dari fermentasi kondisi terang meningkatkan tingkat kematian sel WiDr akibat pemberian doxorubicin. Ekstrak dari kondisi gelap mempunyai nilai $IC_{50} > 500 \mu\text{g/mL}$ terhadap semua sel kanker uji. Kedua ekstrak mempunyai nilai $IC_{50} > 500 \mu\text{g/mL}$ terhadap sel normal Vero. Uji antimikroba ekstrak hasil fermentasi kondisi gelap menunjukkan potensi lebih baik dibandingkan kondisi terang.

Kata-kata kunci : *Arthrinium rasikravindrae*, antioksidan, antimikroba, *Coleus amboinicus*, cahaya, metabolit sekunder, sitotoksik.

ABSTRACT

Endophytic microorganisms were one of the promising sources in producing bioactive compounds to be developed for new drug candidates. They were found to have the ability to generate the same compounds as their host plant. Metabolite producing capacity of the endophyte was known to be affected by light exposure during fermentation process. This study focused on an endophytic fungus *Arthrinium rasikravindrae* isolated from *Coleus amboinicus* stem and revealed its metabolite profiles due to light exposure as well as its bioactivity potential. *A. rasikravindrae* was cultured in potato dextrose broth medium for 14 days and fermented in dark and exposed to natural light. Metabolite profiling was performed using TLC and GC-MS analysis. The activities were observed using DPPH assay for antioxidant and MTT assay for cytotoxicity potential. The results showed that *A. rasikravindrae* ethyl acetate extract produced during dark and exposed to light fermentation conditions contained different compounds but there were some showed similarity with their host plant. Methyl octadec-9-enoate was found in all fermentation conditions as well as in *C.amboinicus* stem extract. Beside methyl octadec-9-enoate, methyl palmitate was also present in both *A. rasikravindrae* extract fermented exposed to light and its host plant. The antioxidant activity of extract generated from dark fermentation condition was better compared to that exposed to light with IC_{50} value of 66.36 ± 0.53 vs > 250 $\mu\text{g/mL}$. However, cytotoxic activity screening against several cancer cell lines exhibited opposing results in which extract from light exposed fermentation resulted in better cytotoxic activity (IC_{50} value of 291.40 ± 2.34 $\mu\text{g/mL}$ on WiDr, 336.80 ± 5.05 $\mu\text{g/mL}$ on T47D, and 404.73 ± 3.46 $\mu\text{g/mL}$ on Hela cell lines). Extracts from fermentation in light conditions increased the rate of cell death of WiDR due to doxorubicin administration. Extract obtained from dark fermentation condition showed $IC_{50} > 500$ $\mu\text{g/mL}$ in all tested cancer cell lines. Both extracts had IC values > 500 $\mu\text{g} / \text{mL}$ against normal Vero cells. In the antibacterial and anti-fungal test, the potential of the extract from fermentation in dark conditions has a better potential than in light conditions.

Key words: *Arthrinium rasikravindrae*, antioxidant, antimicrobial, *C.amboinicus*, secondary metabolites, citotoxic, light.