

ABSTRAK

Jamur Pelawan (*Heimioporus sp.*) diketahui memiliki kandungan senyawa metabolit sekunder alkaloid, triterpenoid, steroid, fenol, tanin dan flavonoid yang berpotensi dikembangkan sebagai terapi kanker serviks. Penelitian terdahulu menunjukkan potensi antikanker ekstrak etanol *Heimioporus sp.* yang menarik untuk di eksplorasi dan teliti lebih lanjut. Penelitian ini menguji aktivitas antikanker secara *in vitro* fraksi n-heksan, etil asetat, metanol dan air *Heimioporus sp.*, dengan uji sitotoksisitas dan selektivitas (*MTT*), siklus sel (pewarnaan *propidium iodide* dan *flow cytometry*) dan analisis molekuler ekspresi gen regulator siklus sel (*qRT-PCR*). Hasil penelitian menunjukkan fraksi etil asetat, air, n-heksan, dan metanol *Heimioporus sp.* bersifat sitotoksik tinggi hingga sedang terhadap sel kanker servik HeLa dengan nilai IC_{50} masing-masing secara berurutan sebesar 5,67; 11,68; 99,48; dan 124,90 $\mu\text{g/mL}$, namun tidak selektif ($SI < 3$) atau sitotoksik pada sel normal Vero. Fraksi potensial (etil asetat *Heimioporus sp.*) diduga menyebabkan kerusakan materi genetik DNA sehingga menyebabkan penghentian siklus sel pada fase S yang menyebabkan penghambatan proliferasi pada sel HeLa. Studi ekspresi gen mendukung dugaan uji siklus sel yang dibuktikan dengan peningkatan ekspresi gen regulator siklus sel *PCNA*. Studi pustaka kandungan senyawa kimia fraksi etil asetat *Heimioporus sp.* dan potensi antikankernya menunjukkan mekanisme yang sama dengan hasil uji *in vitro* pada penelitian ini yakni penghambatan proliferasi sel HeLa.

Kata Kunci: Antikanker, Jamur Pelawan (*Heimioporus sp.*), Sitotoksisitas, Siklus sel, dan *qRT-PCR*.

ABSTRACT

Heimioporus sp. Mushrooms is known to contain secondary metabolites such as alkaloids, triterpenoids, steroids, phenols, tannins, and flavonoids, which have potential for development as cervical cancer therapy. Previous studies have demonstrated the anticancer potential of *Heimioporus* sp. ethanol extract, making it an attractive subject for further investigation. This study evaluated the in vitro anticancer activity of *Heimioporus* sp. n-hexane, ethyl acetate, methanol, and aqueous fractions through cytotoxicity and selectivity assays (MTT), cell cycle analysis (propidium iodide staining and flow cytometry), and molecular analysis of cell cycle regulator gene expression (qRT-PCR). The results revealed that the ethyl acetate, aqueous, n-hexane, and methanol fractions of *Heimioporus* sp. exhibited high to moderate cytotoxicity against HeLa cervical cancer cells, with IC₅₀ values of 5.67, 11.68, 99.48, and 124.90 µg/mL, respectively. However, none of the fractions were selective (SI < 3) and also showed cytotoxicity toward normal Vero cells. The ethyl acetate fraction, identified as the most potent, was suggested to induce DNA damage, resulting in cell cycle arrest at the S phase and subsequently inhibiting HeLa cell proliferation. Gene expression analysis supported these findings, as evidenced by the upregulation of the cell cycle regulator gene PCNA. A literature review of the chemical constituents of the ethyl acetate fraction of *Heimioporus* sp. and their anticancer potential revealed a mechanism consistent with this study's in vitro results, namely inhibition of HeLa cell proliferation.

Keywords: Anticancer, Pelawan Mushroom (*Heimioporus* sp.), Cytotoxicity, Cell cycle, and qRT-PCR.