

ABSTRAK

SINTESIS, KARAKTERISASI, DAN UJI ANTIPROLIFERASI SENYAWA DIBUTILTIMAH(IV) DI-(2-KLOROBENZOAT) DAN DIBUTILTIMAH(IV) DI-(2-HIDROKSIBENZOAT) SEBAGAI SENYAWA ANTIANKER TERHADAP SEL KANKER SERVIKS HeLa

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Pada penelitian ini dilakukan sintesis, karakterisasi, dan uji antiproliferasi dari senyawa dibutyltimah(IV) di-2-klorobenzoat dan dibutyltimah(IV) di-2-hidroksibenzoat sebagai antikanker terhadap sel kanker HeLa. Tujuan dilakukannya penelitian ini untuk mengetahui antiproliferasi dari senyawa hasil sintesis.

Senyawa dibutyltimah(IV) di-(2-klorobenzoat) dan dibutyltimah(IV) di-2-hidroksibenzoat disintesis dengan metode refluks menggunakan pelarut metanol selama 4 jam pada suhu $\pm 60^{\circ}\text{C}$. Hasil sintesis kemudian dikeringkan di dalam desikator selama ± 3 bulan hingga diperoleh padatan kering, lalu dikarakterisasi menggunakan spektrofotometer UV-Vis, spektrofotometer FTIR, spektrometer ^1H -NMR dan ^{13}C -NMR, serta *Microelemental Analyzer*.

Hasil penelitian didapatkan padatan senyawa dibutyltimah(IV) di-2-klorobenzoat berwarna kuning mengkilat dengan rendemen sebesar 93,55%. Padatan senyawa dibutyltimah(IV) di-2-hidroksibenzoat berwarna putih tulang dengan rendemen sebesar 84,45%. Aktivitas antiproliferasi senyawa turunan organotin(IV) karboksilat telah diuji terhadap sel kanker serviks HeLa, didapatkan kedua senyawa bersifat aktif. Senyawa dibutyltimah(IV) di-2-hidroksibenzoat memiliki aktivitas antiproliferasi lebih baik dibandingkan senyawa dibutyltimah(IV) di-2-klorobenzoat yang dibuktikan dengan nilai IC_{50} sebesar 3,52 $\mu\text{g/mL}$ dan 4,48 $\mu\text{g/mL}$ serta nilai indeks selektivitas sebesar 13,89 dan 13,79.

Kata Kunci: dibutyltimah(IV) di-(2-klorobenzoat), dibutyltimah(IV) di- (2-hidroksibenzoat), antiproliferasi, sel kanker HeLa

ABSTRACT

SYNTHESIS, CHARACTERIZATION, AND ANTIPROLIFERATION TESTING OF THE COMPOUNDS DIBUTYLTIN(IV) DI-(2- CHLOROBENZOATE) AND DIBUTYLTIN(IV) DI-(2- HYDROXYBENZOATE) AS ANTICANCER COMPOUNDS AGAINST HeLa CERVICAL CANCER CELLS

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In this study, synthesis, characterization, and antiproliferation tests were carried out on the compounds dibutyltin(IV) di-2-chlorobenzoate and dibutyltin(IV) di-2-hydroxybenzoate as anticancer agents against HeLa cancer cells. The purpose of this study was to determine the antiproliferation of the synthesized compounds. Compounds dibutyltin(IV) di-2-chlorobenzoate and dibutyltin(IV) di-2-hydroxybenzoate were synthesized by the reflux method using methanol solvent for 4 hours at a temperature of $\pm 60^{\circ}\text{C}$. The synthesis results were then dried in a desiccator for ± 3 months until a dry solid was obtained, then characterized using a UV-Vis spectrophotometer, FTIR spectrophotometer, ^1H -NMR and ^{13}C -NMR spectrometers, and Microelemental Analyzer. The results of the study obtained a solid compound of dibutyltin(IV) di-(2-chlorobenzoate) which was shiny yellow with a yield of 93.55%. The solid compound of dibutyltin(IV) di-2-hydroxybenzoate was bone white with a yield of 84.45%. The antiproliferative activity of organotin(IV) carboxylate derivative compounds has been tested against HeLa cervical cancer cells, both compounds were found to be active. The compound of dibutyltin(IV) di-2-hydroxybenzoate has better antiproliferative activity than the compound of dibutyltin(IV) di-2-chlorobenzoate which is evidenced by the IC_{50} value of $3.52\text{ }\mu\text{g/mL}$ and $4.48\text{ }\mu\text{g/mL}$ and the selectivity index value of 13.89 and 13.79.

Keywords: dibutyltin(IV) di-(2-chlorobenzoate), dibutyltin(IV) di-(2-hydroxybenzoate), antiproliferative, HeLa cancer cells