Analisis Potensi Terapeutik Atorvastatin dan Pravastatin dalam Kanker Ginjal Menggunakan Lini Sel ACHN = Analysis of the Therapeutic Potential of Atorvastatin and Pravastatin in Kidney Cancer Using ACHN Cell Line

Maria Kiara Anindita, author

Abstrak

Berdasarkan data yang didapat dari International Agency for Research on Cancer (2023), beban global kanker terus meningkat dengan perkiraan 19.3 juta kasus baru pada 2020. Jumlah kasus baru kanker diprediksi meningkat hampir 50% pada 2040 dan akan berdampak pada negara berkembang (Iqhrammullah et al., 2023). Kanker ginjal disebabkan pertumbuhanselabnormalpadajaringanginjal,membentuktumorlalu menjadikankeryang dapat menyebar ke jaringan dan organ lainnya . Karsinoma sel renal atau RCC merupakan jenis kanker ginjal yang paling umum terjadi pada orang dewasa (Gujarathi et al., 2024). Statin merupakan obat yang dikenal karena berpotensi menghambat produksi kolesterol. Di sisi lain, statin juga dapat digunakan untuk pengobatan neoplastik malignan bersamaan kemoterapi dan radioterapi. Mekanisme obat Statin mengarah pada apoptosis melalui pengaturan siklus sel karena memiliki efek pleiotropik (Tripathi et al., 2024). Pada penelitian ini,liniselACHNdikultur dalammediaDublecco’sModifiedEagleMedium(DMEM)yang mengandung fetal bovine serum (FBS) 10% dan antibiotik penicilin-streptomycin 1% (ATCC). Atorvastatin dan Pravastatin diuji kemampuannya sebagai antikanker melalui uji viabilitas dengan MTS Assay dan uji Reactive Oxygen Species dengan reagen DCFH-DA.

.....Based on data from the International Agency for Research on Cancer (2023), the global cancer burden continues to rise, with an estimated 19.3 million new cases reported in 2020. It is projected that the number of new cancer cases will increase by nearly 50% by 2040, significantly impacting developing countries (Iqhrammullah et al., 2023). Kidney cancer is caused by the abnormal growth of cells within kidney tissues, forming tumors that can eventually spread to other tissues and organs. Renal cell carcinoma (RCC) is the most common type of kidney cancer in adults (Gujarathi et al., 2024). Statins are drugs known for their potential to inhibit cholesterol production. Additionally, statins have demonstrated efficacy in treating malignant neoplasms when combined with chemotherapy and radiotherapy. The mechanism of statins involves inducing apoptosis by regulating the cell cycle, attributed to their pleiotropic effects (Tripathi et al., 2024). In this study, ACHN cell lines was cultured in Dublecco’s Modified Eagle Medium (DMEM) media containing 10% fetal bovine serum (FBS) and 1% penicillin-streptomycin antibiotics (ATCC). The anticancer potential of Atorvastatin and Pravastatin were evaluated through viability assays using the MTS assay and Reactive Oxygen Species (ROS) testing with the DCFH-DA reagent.