Analisis Fitokimia dan Uji In Vitro Ekstrak Daun Kelor (Moringa oleifera) sebagai Antioksidan dan Inhibitor Pertumbuhan Sel Kanker Serviks HeLa = Phytochemical Analysis and In Vitro Study on Moringa oleifera Leaf Extract as Antioxidant and Growth Inhibitor of HeLa Cervical Cancer Cells

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Abstrak

Kanker serviks menduduki peringkat keempat penyebab kematian akibat kanker pada wanita. Insidensi, prevalensi, serta tingkat mortalitas akibat kanker serviks di Indonesia terus mengalami peningkatan. Modalitas terapi yang tersedia memiliki keterbatasan, sehingga perlu dikembangkan penelitian mengenai potensi bahan alam sebagai terapi alternatif, salah satunya daun kelor (Moringa oleifera). Penelitian ini bertujuan untuk mengetahui komposisi senyawa fitokimia, aktivitas antioksidan, serta aktivitas sitotoksik ekstrak daun Moringa oleifera tehadap sel kanker serviks HeLa. Ekstraksi daun kelor dilakukan dengan teknik maserasi sehingga didapatkan ekstrak etanol, etil asetat, dan n-heksana. Analisis fitokimia dilakukan secara kualitatif dan kuantitatif. Aktivitas antioksidan diukur menggunakan metode DPPH sedangkan aktivitas sitotoksiknya terhadap sel kanker serviks HeLa menggunakan metode MTT. Komponen senyawa fitokimia yang terkandung di dalam ekstrak daun Moringa oleifera mencakup alkaloid, flavonoid, glikosida, saponin, tanin, triterpenoid, dan steroid. Ekstrak etanol mengandung total fenol tertinggi sedangkan kandungan total flavonoid tertinggi ditemukan pada ekstrak etil asetat. Aktivitas antioksidan ekstrak etanol daun kelor bersifat aktif (IC50: 50,54 µg/ml), ekstrak etil asetat moderat (IC50: 206,71 µg/ml) sedangkan ekstrak n-heksana tidak memiliki aktivitas antioksidan (IC50: 5397,43 µg/ml). Ekstrak etanol, etil asetat, dan n-heksana daun Moringa oleifera menunjukkan aktivitas sitotoksik moderat terhadap sel kanker serviks HeLa dengan nilai IC50 berturut-turut 53,17 µg/ml; 28,79 µg/ml; 48,65 µg/ml.
.....Cervical cancer is the fourth leading cause of cancer death in women. Incidence, prevalence, and mortality rates due to cervical cancer in Indonesia continue to increase. The current therapeutic choices have some limitations, thus it is necessary to explore the potential of natural materials as alternative treatment, one of which is Moringa oleifera leaf. This study aimed to determine the content of phytochemical compounds, antioxidant activity, and cytotoxic activity of Moringa oleifera leaf extract against HeLa cervical cancer cells. Maceration technique on Moringa leaves produced ethanol, ethyl acetate, and n-hexane extracts. Phytochemical analysis was conducted qualitative and quantitatively. Antioxidant activity was measured using the DPPH method, while its cytotoxic activity against HeLa cervical cancer cells was determined using the MTT method. Moringa leaves extract contains alkaloids, flavonoids, glycosides, saponins, tannins, triterpenoids, and steroids. The ethanol extract has the highest total phenol content while the highest total flavonoid content is found in the ethyl acetate extract. The ethanol extract has active antioxidant activity (IC50: 50.54 µg/ml), the ethyl acetate extract has moderate activity (IC50: 206.71 µg/ml) while the n-hexane extract shows no antioxidant activity (IC50: 5397.43 µg/ml). Ethanol, ethyl acetate, and n-hexane extracts of Moringa oleifera leaves shows cytotoxic activity against HeLa cells with moderate intensity with IC50 values as follows, 53.17 µg/ml; 28.79 µg/ml; 48.65 µg/ml, respectively.