



Research Article

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Cytotoxic Interaction Between Cisplatin and *Eclipta alba* Extract in HeLa Cervical Cancer Cells

Interaksi Sitotoksik antara Cisplatin dan Ekstrak *Eclipta alba* pada Sel Kanker Serviks HeLa

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ABSTRACT

Cervical cancer remains a major cause of cancer-related mortality among women worldwide. Cisplatin is a first-line chemotherapeutic agent, but its use is limited by resistance and dose-dependent toxicity. This study evaluated the cytotoxic interaction between cisplatin and *Eclipta alba* extract in HeLa cervical cancer cells. Ethanolic maceration yielded 17.38 g of extract, corresponding to 10.22%. Thin-layer chromatographic screening indicated flavonoids, coumarins, and triterpenoid saponins, while LC-MS/MS tentatively identified eclalbasaponin I, wedelolactone, pinoquercetin, luteolin, and quercitrin. Cytotoxicity was assessed using the MTT assay. The IC₅₀ values were 1.15 ± 0.16 µg/mL for cisplatin and 598.29 ± 42.89 µg/mL for the extract. Under fixed sub-IC₅₀ cisplatin conditions, 0.42 µg/mL, the extract IC₅₀ decreased to 64.97 ± 5.41 µg/mL. Combination index values below 1 suggested synergistic interaction under fixed-dose conditions, indicating a potential dose-sparing strategy requiring further validation.

Kata kunci:

Cisplatin

Efek sinergis

Eclipta alba

Kanker serviks

Sel HeLa

ABSTRAK

Kanker serviks masih menjadi salah satu penyebab utama kematian akibat kanker pada perempuan di seluruh dunia. Cisplatin merupakan agen kemoterapi lini pertama, tetapi penggunaannya dibatasi oleh resistensi dan toksisitas yang bergantung pada dosis. Penelitian ini mengevaluasi interaksi sitotoksik antara cisplatin dan ekstrak *Eclipta alba* pada sel kanker serviks HeLa. Maserasi etanol menghasilkan 17,38 g ekstrak dengan rendemen 10,22%. Skrining kromatografi lapis tipis menunjukkan adanya flavonoid, kumarin, dan saponin triterpenoid, sedangkan LC-MS/MS secara tentatif mengidentifikasi eclalbasaponin I, wedelolaktone, pinoquercetin, luteolin, dan quercitrin. Sitotoksitas dievaluasi menggunakan uji MTT. Nilai IC₅₀ cisplatin dan ekstrak masing-masing sebesar 1,15 ± 0,16 µg/mL dan 598,29 ± 42,89 µg/mL. Pada kondisi cisplatin sub-IC₅₀ tetap, 0,42 µg/mL, IC₅₀ ekstrak menurun menjadi 64,97 ± 5,41 µg/mL. Nilai indeks kombinasi <1 menunjukkan interaksi sinergis pada kondisi dosis tetap, sehingga mengindikasikan potensi strategi penghematan dosis yang masih memerlukan validasi lebih lanjut.

