Peran kurkumin sebagai agen ko-kemoterapi cisplatin terhadap sel SKOV3 melalui modulasi jalur endothelin-1 dan reseptor endothelin = The role of curcumin as co-chemotherapeutic agent with cisplatin through modulation of endothelin-1 and endothelin receptor pathway in SKOV3 cells

Nurul Inayah Rahmani, author

Abstrak

Latar belakang: Mortalitas yang tinggi pada kanker ovarium utamanya disebabkan oleh progresi, kemoresistensi, dan rekurensinya. Diketahui progresivitas dan kemoresistensi kanker ovarium dipengaruhi oleh aksis endothelin, yang melibatkan endothelin-1 dan reseptor endothelin melalui proses epithelial-to-mesenchymal transition (EMT), sehingga menargetkan aksis ini merupakan prospek yang menjanjikan dalam pengembangan agen sensitisasi yang efektif. Kurkumin, senyawa herbal yang banyak di Indonesia, berpotensi menjadi agen ko-kemoterapi kanker ovarium, namun mekanismenya masih belum banyak diketahui. Penelitian sebelumnya menemukan bahwa kurkumin mampu menekan jalur endothelin di beberapa galur sel.
Tujuan: Penelitian eksperimental dilakukan untuk menganalisis aktivitas kurkumin sebagai agen ko-kemoterapi cisplatin dalam memodulasi aksis endothelin pada sel SKOV3.
Metode: Sampel terbagi menjadi tiga kelompok, yaitu kelompok kontrol (hanya diberikan vehicle), kelompok cisplatin 3,75 M, serta kelompok kurkumin 5 M dan cisplatin 3,75 M. Sel diinkubasi selama 48 jam setelah pemberian perlakuan. Setelah 48 jam, dilakukan pemeriksaan ekspresi mRNA endothelin-1, reseptor endothelin A, dan reseptor endothelin B menggunakan metode qRT-PCR.
Hasil: Terdapat penurunan signifikan ekspresi mRNA endothelin-1 pada sel SKOV3 yang diberikan kurkumin bersama cisplatin (0,55±0,32; p=0,005) dibandingkan dengan kelompok kontrol (3,35±2,80). Tidak ditemukan perbedaan dalam ekspresi mRNA reseptor endothelin A dan B yang signifikan antar kelompok.
Kesimpulan: Kurkumin sebagai agen ko-kemoterapi cisplatin mampu memodulasi aksis endothelin melalui penekanan ekspresi mRNA endothelin-1, namun tidak melalui penekanan ekspresi mRNA reseptor endothelin A maupun B.
.....Background: The high mortality of ovarian cancer is mainly attributed to its progression, chemoresistance to cisplatin, and recurrence. This progression and chemoresistance is mediated by the endothelin axis, which involves endothelin-1 and endothelin receptors through epithelial-to-mesenchymal transition (EMT) process, so targeting this axis is a promising prospect in developing an effective chemosensitizer. According to previous studies, curcumin, a ubiquitous herbal compound in Indonesia, has the potential to be a co-chemotherapeutic agent in ovarian cancer, but its mechanism in cancer progression is still unknown. Previous studies show that curcumin has the ability to modulate endothelin axis in non cancer cells.
Objective: To analyze the activity of curcumin as a co-chemotherapeutic agent with cisplatin in modulating endothelin axis in SKOV3 cells.
Methods: Sample is divided into three groups: control group (only given vehicle), cisplatin 3,75 M group,

and curcumin 5 M and cisplatin 3,75 M group. Cells are then incubated for 48 hours. After 48 hours, expression of endothelin-1, endothelin receptor A, and endothelin receptor B mRNAs are measured by qRT-PCR.

Results: There is a significant decrease in endothelin-1 mRNA expression in SKOV3 cells treated with curcumin and cisplatin (0,55±0,32; p=0,005) compared to control group (3,35±2,80). There is no significant difference of endothelin receptor A and B mRNA expression between each group.

Conclusion: Curcumin as a co-chemotherapeutic agent with cisplatin potentially modulates endothelin axis through repression of endothelin-1 mRNA expression, but not endothelin receptor mRNA A or B expression.