Peran hypoxia inducible factor (HIF) terhadap ketahanan hidup sel kanker payudara manusia T47D melalui pengaturan sitokrom-C dan survivin = The role of hypoxia inducible factor (HIF) on breast cancer cell line T47D viabilities through pro apoptotic cytochrome-C and anti apoptotic survivin regulation

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Abstrak

[ABSTRAK
Latar belakang: Peningkatan hypoxia-inducible factor (HIF) pada jaringan kanker payudara memperburuk prognosis dan meningkatkan resistensi terhadap terapi kanker. Hal ini disebabkan karena HIF dapat mengaktifkan ekspresi gen target yang berperan dalam pertumbuhan sel kanker. Namun di sisi lain HIF berperan pula mengatur kematian sel melalui protein pro-apoptosis sitokrom-c dan protein anti-apoptosis survivin. Oleh karena itu timbul pertanyaan bagaimana peran HIF terhadap ketahanan hidup sel kanker payudara.
Tujuan: Menganalisis peran HIF-1α dan HIF-2α terhadap ketahanan hidup sel kanker payudara T47D melalui pengaturan protein pro-apoptosis sitokrom-c dan anti-apoptosis survivin.
Metode: Sel kanker payudara T47D dibagi menjadi dua kelompok. Kelompok pertama diberikan CoCl2 untuk menginduksi HIF dan kelompok kedua diberikan FM19G11 untuk menghambat HIF. Setelah diinduksi selama enam jam, sel kanker payudara T47D dianalisis untuk menilai ekspresi protein dan mRNA HIF-1α, mRNA HIF-2α, protein sitokrom-c, mRNA survivin dan viabilitas sel.
Hasil: Induksi HIF dengan CoCl2 meningkatkan protein pro-apoptosis sitokrom-c dan mRNA anti-apoptosis survivin, namun tidak menyebabkan perubahan ketahanan hidup sel. Inhibisi HIF dengan FM19G11 menurunkan protein pro-apoptosis sitokrom-c dan mRNA anti-apoptosis survivin, namun tidak menyebabkan perubahan viabilitas sel.
Kesimpulan: HIF tidak mempengaruhi ketahanan hidup sel kanker payudara T47D karena mengatur keseimbangan antara ekspresi pro-apoptosis sitokrom-c dan anti-apoptosis survivin.
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ABSTRAK
Backgrounds: The increasing of hypoxia-inducible factor (HIF) in breast cancer tissue could worsen the prognosis and enhance resistency in cancer therapy, because HIF can enhance target genes that play a crucial role in cancer cell growth. On the other hand HIF is also involved in cell death pathway through pro-apoptotic protein cytochrome-c and anti-apoptotic protein survivin.
Objectives: The aim of this study is to analyze the role of HIF-1α and HIF-2α on breast cancer cell line T47D survival through the regulation of pro-apoptotic cytochrome-c and anti-apoptotic survivin expression.
Methods: T47D breast cancer cells were divided into two groups. The first group was given CoCl2 to induce HIF and the second group was given FM19G11 to inhibit HIF. After six hours treatment by CoCl2 or FM19G11, T47D breast cancer cells were analyzed for the expression of HIF-1α protein and mRNA, HIF-2α mRNA, cytochrome-c protein, survivin mRNA and cells viabilities.

Results: Induction of HIF by CoCl2 increased the pro-apoptotic cytochrome-c and anti-apoptotic survivin expression, but did not lead to changes in cells viabilities. Inhibition of HIF by FM19G11 decreased the pro-apoptotic cytochrome-c protein and survivin expression but did not lead to changes in cells viabilities.
Conclusion: HIF-1α and HIF-2α have no effect on breast cancer cell line T47D survival because both of them regulate the balance between pro-apoptotic cytochrome-c and anti-apoptotic survivin expression., Backgrounds: The increasing of hypoxia-inducible factor (HIF) in breast cancer tissue could worsen the prognosis and enhance resistency in cancer therapy, because HIF can enhance target genes that play a crucial role in cancer cell growth. On the other hand HIF is also involved in cell death pathway through pro-apoptotic protein cytochrome-c and anti-apoptotic protein survivin.
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