Efek ko-kultur 3D sel sumsum tulang CD90 CD34 dengan sel stelata hepatik primer terhadap ekspresi tenascin C = Effect of bone marrow CD90 CD34 cells and hepatic stellate cells 3D Coculture on tenascin C expression

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Abstrak

ABSTRAK
Latar Belakang: Transplantasi sel sumsum tulang dilaporkan memperbaiki fibrosis hati. Beberapa studi in vitro menunjukkan bukti mekanisme perbaikan dengan melakukan ko-kultur 2D sel sumsum tulang dan sel stelata hepatik. Pada studi tersebut, sel sumsum tulang menghambat aktivasi sel stelata hepatik dan mengurangi deposisi matriks ekstra sel. Pada penelitian ini, mekanisme perbaikan tersebut diteliti dengan melakukan ko-kultur sel sumsum tulang dan sel stelata hepatik pada model kultur 3D dan meneliti efeknya terhadap ekspresi tenascin-C, suatu glikoprotein matriks yang memiliki kontribusi dalam fibrogenesis hati.

Metode: Sel stelata hepatik dan sel sumsum tulang yang diisolasi dari tikus dikultur sendiri (monokultur) dan diko-kultur direk dengan metode hanging drop. Karakterisasi sel sumsum tulang dilakukan dengan analisis flowcytometry CD90CD34. Sampel dari kedua kelompok kultur dipanen pada hari ke-7 untuk analisis imunositokimia tenascin-C.

Hasil: Persentase sel CD90+CD34- dari sel sumsum tulang yang diisolasi adalah 35,2%. Hasil yang diperoleh pada penelitian ini menunjukkan bahwa sel sumsum tulang memilki efek antifibrotik yang dibuktikan dengan penurunan signifikan ekspresi tenascin-C pada kelompok ko-kultur ($p < 0,05$) dibandingkan dengan kelompok monokultur pada hari kultur ke-7.

Kesimpulan: Temuan tersebut menunjukkan bahwa sel sumsum tulang memiliki efek terapeutik potensial terhadap proses fibrosis hati melalui efeknya dalam meminimalkan ekspresi matriks ekstra sel tenascin-C.
<hr><i>ABSTRACT
Background: Transplantation of bone marrow derived cells (BMCs) has been reported to improve liver fibrosis. Several in vitro studies have shown evidence for the mechanism of improvement by co-culturing BMCs and hepatic stellate cells (HSCs) in 2D models. In those studies, BMCs were reported to inhibit HSCs activation and reduce extracellular matrix deposition. In this study, we investigated the mechanism by co-culturing BMCs and HSCs in 3D model and its effect on tenascin-C expression, an extracellular matrix glycoprotein that has a contribution in liver fibrogenesis.

Methods: Primary isolated rat HSCs and BMCs were cultured alone (monoculture) and directly co-cultured with hanging drop method. Characterization of BMSCs was performed by flowcytometry CD90CD34 analysis. The monoculture and co-culture samples were harvested on day 7 for tenascin-C immunocytochemistry.

Results: The percentage of CD90+CD34- cells from the isolated BMCs was 35.2%. Result of the present study showed that BMCs have a significant antifibrotic effect as evidenced by the significant decrease in in tenascin-C expression in the co-culture group ($p < 0.05$) compared to the monoculture group on day 7.

Conclusions: This finding demonstrates that BMSCs have a potential therapeutic effect against liver fibrotic process through their effect in minimizing extracellular matrix tenascin-C expression.</i>