# Pengaruh membran perikardium bovine terhadap proliferasi ekspresi osteokalsin dan deposisi ion kalsium dalam biakan sel osteoblas : Penelitian in vitro = Effect of bovine pericardium membrane in osteoblast cell proliferation osteocalcin expression and CA++ deposition on osteoblast cell culture

Siti Yaoman Ely, author



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Abstrak

[ABSTRAK<br>
Latar belakang :  Rekonstruksi tulang pada regio kraniofasial membutuhkan bahan tandur sebagai matriks dalam proses regenerasi tulang, untuk mereplikasi struktur tulang yang hilang. Membran perikardium bovine adalah  biomaterial yang kaya akan kolagen yang merupakan unsur utama matriks ekstraselular tulang. Bagaimana perilaku osteoblas terhadap bahan membran perikardium bovine produksi BATAN, Jakarta, Indonesia  masih belum di teliti.
Tujuan : Mengevaluasi perilaku osteoblas manusia MG63 dalam proses regenerasi tulang setelah ditambahkan dengan membran perikardium bovine (Batan, Jakarta, Indonesia).
Metoda : Sel osteoblas manusia MG63 dibiakan sampai jumlah mencukupi, kemudian dibagi menjadi 2 kelompok, kelompok pertama ditambahkan dengan membran perikardium bovine dan kelompok kedua tanpa perlakuan sebagai kontrol. Dilakukan pengukuran proliferasi sel osteoblas dalam 24 jam dengan MTT assay. Ekspresi osteokalsin  dan deposisi ion kalsium dievaluasi pada hari ke 7, 14, 21, dan 28 setelah perlakuan.
Hasil : Membran perikardium bovine  meningkatkan rerata proliferasi sel osteoblas, menurunkan level ekspresi osteokalsin pada tahap akhir kalsifikasi sel  yang mengindikasikan perlambatan proses down regulation kalsifikasi sel osteoblas, serta meningkatkan deposisi ion kalsium pada biakan sel osteoblas manusia MG63.
Kesimpulan : Membran perikardium bovine produksi  BATAN, Jakarta, Indonesia meningkatkan proses diferensiasi dan mineralisasi sel osteoblas.
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ABSTRACT<br>
Background : Bone reconstruction of the craniofacial region requires graft material for the bone regeneration process, to replicate structure of the bone. As a graft biomaterial, Bovine pericardium membrane is rich in collagen fibers, which is the main element of  bone extracellular matrix. The human cell line behavior in regeneration process after transplantation of bovine pericardium membrane produced by BATAN, Jakarta, Indonesia has not been reported.
Objective : The objective of this study was to evaluate the behavior of human osteoblast cell line MG63 in bone regeneration process, after transplantation of bovine pericardium membrane (BATAN, Jakarta, Indonesia).
Method : Human osteoblast cell line culture was divided into 2 groups, first group transplanted with bovine pericardium membrane and second group without bovine pericardium membrane as a control. After 24 hours, the proliferation  of osteoblast cell are analyzed using MTT assay test, 7, 14, 21, 28 days after

transplantation, expression of osteocalcin and deposition of Ca++ was evaluated.
Results: Bovine pericardium membrane improved the mean proliferation of osteoblast, lowering the expression level of osteocalcin, that indicate a slowdown in down-regulation process of osteoblast cells calcification, and increase deposition of Ca++ in human osteoblast cell line MG63.
Conclusions : Bovine pericardium membrane produced by BATAN, Jakarta, Indonesia has to increase differentiation and mineralization of osteoblast cell.;Background : Bone reconstruction of the craniofacial region requires graft material for the bone regeneration process, to replicate structure of the bone. As a graft biomaterial, Bovine pericardium membrane is rich in collagen fibers, which is the main element of bone extracellular matrix. The human cell line behavior in regeneration process after transplantation of bovine pericardium membrane produced by BATAN, Jakarta, Indonesia has not been reported.
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