МОНГОЛ УЛСЫН БОЛОВСРОЛ, СОЁЛ ШИНЖЛЭХ УХААН,
СПОРТЫН ЯАМ
АНАГААХЫН ШИНЖЛЭХ УХААНЫ ҮНДЭСНИЙ ИХ СУРГУУЛЬ

ЭНХБАЯРЫН БАЯРМАА

ХУЛГАНЫ ЯСНЫ ХЭМЭЭС ЯЛГАН АВСАН ҮҮДЭЛ ЭСИЙГ ХҮЧИЛТӨРӨГЧИЙН ЯЛГААТАЙ ОРЧИНД ӨСГӨВӨРЛӨСӨН ДҮН

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Анагаах ухааны магистрын зэрэг горилсон нэг сэдэвт бүтээл

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Culture mouse bone marrow derived stem cells under hypoxic conditions

Key word: colony forming unit, colony, mesenchymal stem cell, oxygen concentration, cell marker

Background: The use of stem cells of various clinical applications is highly expected and the production of good quality stem cells is very critical for basic studies. In the bone marrow, hematopoietic and mesenchymal stem cells from an unique niche in which the oxygen tension is low. Hypoxia may have a role in maintaining stem cell fate, self renewal and multi-potency. We investigated whether low oxygen culture would be beneficial for hematopoietic stem cell and mesenchymal stem cell.

Material and methodology: BMCs from 8-12 week aged mice were subjected to hypoxic conditioning by culture for 8-10 days in 20%, 3%, 1% oxygen. For culture $2x10^5$ cell/ml were seeded in colony forming assay and $2x10^6$ cell/ml were seeded in chamber slide. We counted cell colonies under different hypoxic conditions by Olympus IX71 fluorescence microscope. After cell culture in chamber slide, we stained cells by anti-CD90 and anti-CD105 then counted positive cells by Olympus IX71 fluorescence microscope.

Results: Compared to normoxic cells and hypoxic cells well morphologically undifferentiated and counted by Olympus IX71 microscope. More colonies and cell markers were observed at 3%, 1% oxygen. Statistical significances were identified with granulocytes and macrophage colony ($p<0.05$) in hypoxic condition.

Conclusions: Our data suggests low physiological oxygen culture could improve the stemness of macrophage and granulocytes colony and improve the differentiation of mesenchymal cells. Long term culture will be necessary to confirm whether low physiological oxygen levels also improve genomic stability.

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