

عنوان مقاله:

Evaluation of hematopoietic stem cell expansion in the presence of garcinol

محل انتشار:

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خلاصه مقاله:

Objective: The application of human cord blood (hCB) is limited to children by using relatively small volume of cord blood that does not contain enough hematopoietic stem cells (HSCs). So, efforts for applying cord blood stem cells in transplantation have led to establishment of some approaches for ex vivo expansion of HSCs such as garcinol. **Materials and Methods:** CD133+ HSCs were separated by a magnetic-activated cell sorting (MACS) system. Isolated cells were cultured with different doses of garcinol, SCF, TPO and FLT-3L. The optimal dose of garcinol for ex vivo expansion of HSCs was determined by direct counting. Flow cytometry was used to evaluate the expression of CD133 marker to check the ability of garcinol in maintenance of HSCs. Colony forming cell (CFC) assay was performed to evaluate clonogenic capability of treated cells. The level of expression of CXCR4 gene was evaluated by RT-PCR. Data were analyzed using Student's t test. **Results:** Our results showed that CD133+ HSCs in the presence of garcinol (5-10 μ M) had high expansion activity and cell counting showed that the number of cells in treated group was higher than control group (1.9 –fold) and CFC assay showed that the number of colonies following treatment with garcinol had 1.3-fold increase. Treatment of HSCs with garcinol resulted in 9.6-fold increase in terms of CXCR4 expression in comparison to control group. **Conclusion:** The present study showed that garcinol can improve ex vivo expansion of HSCs and enhance their potential for homing to bone marrow.

کلمات کلیدی:

Hematopoietic stem cells, expansion, Garcinol, Small-molecule compounds

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