CD26+ Cord Blood Mononuclear Cells Significantly Produce B, T, and NK Cells

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ABSTRACT

Background: Umbilical cord blood (UCB) is an alternative source of hematopoietic stem cell transplantation (HSCT), used in Leukemia treatment. CD26+ cells, a fraction of CD34+cells, are a major population of UCB cells which negatively regulate the in vivo homing and engraftment of HSCs. CD26 is highly expressed in various cells such as HSCs, immune cells, fibroblasts, and epithelial cells. It has been shown that the inhibition of the CD26 on CD34+ cells improves the efficiency of Hematopoietic Stem and Progenitor Cell (HPC) transplantation. Objective: To evaluate the relationship between the production of B, T, and NK cells from the CD26 positive fraction of cord blood mononuclear cells. Methods: Cord blood mononuclear cells were cultured for 21 days using different combinations of stem cell factors (SCF), Flt3 ligand (FL), IL-2, IL-7, and IL-15. The harvested cells were then analyzed by flowcytometry every week for 21 days. Results: T cell differentiation from CD26 subset of cord blood mononuclear cells increased by using IL-2 and IL-7. Our data showed that IL-2 and IL-7 significantly affected the generation of B cells from CD26+ cord blood mononuclear cells. On the other hand, NK (NKp46+) derived CD26+ cells increased by IL-15 and IL-2. Conclusion: Taking all into account, we conclude that B, T, and NK cells can differentiate from the CD26+ subset of mononuclear cord blood cells by using key regulatory cytokines.


Keywords: CD26 Cells, Cytokine, Immune Cells, Umbilical Cord Blood

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