Thesis Title Peripheral Blood Stem Cell Collection from Healthy Donor by CS-3000 plus

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ABSTRACT

Peripheral blood stem cell (PBSC) components were collected from 22 healthy donors with HLA-identical sibling. granulocyte-colony stimulating factor (G-CSF) were given to each donors in a daily morning dose of 16 μg/kg/day for 5 days. The PBSC concentrates were separated by using Fenwal CS-3000 Plus with granulo separation chamber, small volume chamber collection, and interface detector setting to 150. Whole blood flow rate were 60ml/min., and 12 L of whole blood were processed.

Mobilization with G-CSF was well tolerated. On Day 4 before harvesting, WBC, monocyte and lymphocyte were increased by 7.20 fold, 8.70 fold, and 2.31 fold from baseline, respectively. Circulating CD34+ cells rose from a baseline of 19.90 fold. In contrast, there were no significant change in the platelet counts.

In order to harvest PBSC, the cells were collected two times on Day 4 and Day 5. The volume of product was 50 ml. Overall the mean collection yields in first collection were as follow : WBC 5.89×10^8/kg, MNC 5.5×10^8/kg , and CD34+ cells 26.0×10^6/kg. The collection yield in second collection were : WBC 4.69×10^8/kg, MNC 4.35×10^8/kg , and CD34+ cells 5.8×10^6/kg. MNC purity were 93.47% and 90.95%. A total number of CD34+ cells for engraftment was 39.3×10^6/kg of recipient body weight. None of PBSC donors received transfusions or were hospitalized. Acute side effects of G-CSF administration and citrate toxicity were usually readily manageable. The follow-up blood counts were normal in all cases.

In conclusion, we found that CS-3000 Plus blood cell separator provided low volume, consistent concentrates and low contamination with unwanted cell. Finally, PBSC collection is safe, well tolerated, and results in high numbers of hematopoietic progenitor cells.