



STEM-CELLBANKER for Use in Endothelial Progenitor Cells Cryopreservation

Endothelial progenitor cells (EPCs) were originally identified as a population of stem cells in human peripheral blood having the ability to differentiate into mature functional endothelial cells, the cells that make up the lining of blood vessels. Recent investigation have shown that EPCs have the therapeutic potential for the treatment of patients suffering from severe limb ischemia or myocardial infarction.

STEM-CELLBANKER cell cryopreservation solution has been proved for successful cryopreservation of EPCs in our collaborative study with Graduate School of Comprehensive Human Sciences Tsukuba.

(Publication: Nagano M., Ohneda O., et al. Identification of functional endothelial progenitor cells suitable for treatment of ischemic tissue using human umbilical cord blood. *Blood*. 2007; 110: 151-160)

Materials and Method

1. Human umbilical cord blood-derived EPCs was cultured and collected by centrifugation.
2. Cell concentration was adjusted to 1.5×10^5 cells/ml and with STEM-CELLBANKER.
3. The mixture was transfer to cryotubes and frozen directly in -80 deep freezer for 3 days without programmed cooling rate freezing, followed by cryopreservation in -196 liquid nitrogen tank for 72 days.
4. After thawing the cells in 37 waterbath, cell-washing was conducted in a tube with mixture of DMEM (9ml) and FBS (1ml) for 2 times.
5. Cells were centrifuged 1000rpm/s for 5min at 4 and followed by cell counting (for cell viability).
6. Cells with concentration of 7.5×10^4 cells/ml were plated in 35mm dishes for cell proliferation determination.
7. Cell counting was done at 4th day after culture (for cell proliferation ability).

Result:

- Cell viability after thawing

An average of more than 90% of cell viability after thawing was observed.

➤ Cell proliferation ability

Thawed EPCs was indicated for possessing higher cell proliferation ability than EPCs cryopreserved with 90%FBS + 10%DMSO at same condition.

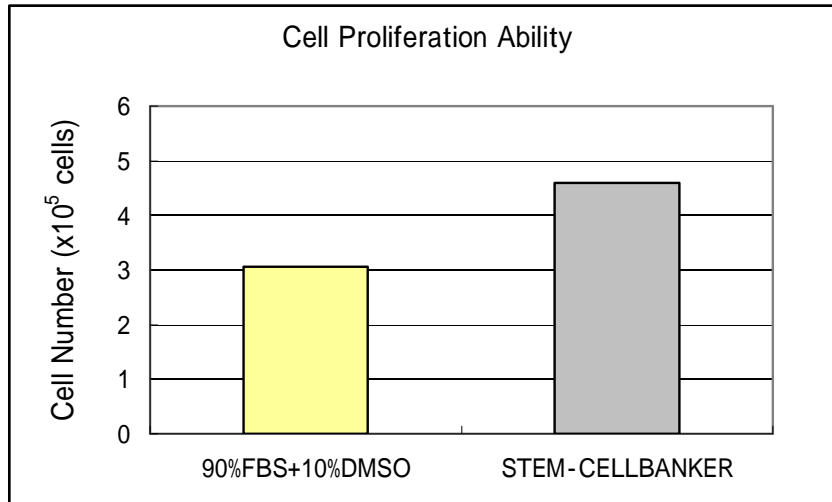


Figure 1 shows proliferation of EPCs at day 4 after thawing.

➤ Tube formation ability

Thawed EPCs was indicated for possessing normal capillary tube-like formation ability.

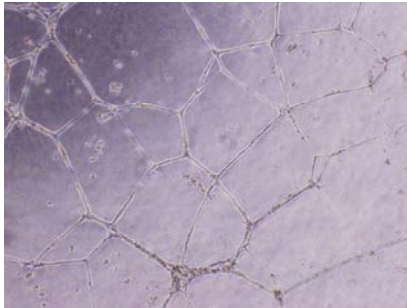


Figure 2 shows EPCs formed capillary tube-like structure on Matrigel.

Impression after use of STEM-CELLBANKER

1. STEM-CELLBANKER is very easy to use because of the simple cell freezing and thawing procedures.
2. Cell viability after thawing is fully satisfied. (Cell viability is as high as 90% or more).
3. Stem cells preserved with STEM-CELLBANKER show good cell proliferation.

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