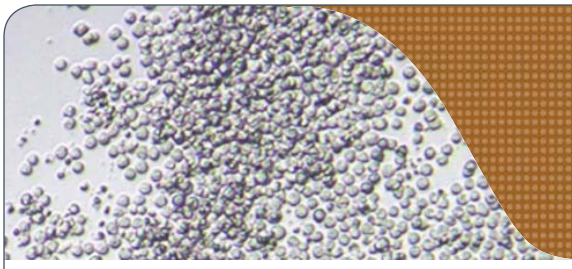

StemSpan™-ACF

Animal Component-Free Expansion Medium

Animal Component-Free (ACF) Medium for Expansion of Hematopoietic Progenitor Cells

Most serum-free media for culture and expansion of hematopoietic cells contain animal-derived components or components that have been purified from human plasma. Although these media are very useful for research into hematopoietic progenitor expansion, the further development and application of hematopoietic cell expansion procedures for cell therapy will require the availability of expansion media that do not contain any animal- or human-derived components.

STEMCELL Technologies Inc. introduces a new animal component-free (ACF) expansion medium, StemSpan™-ACF, which only contains recombinant and synthetic components. This new medium has been extensively tested in expansion cultures using cord blood (CB)- and bone marrow (BM)-derived hematopoietic cells and compared against STEMCELL Technologies' other serum-free expansion media, StemSpan™ SFEM and StemSpan™ H3000.

Comparison of Hematopoietic Expansion in Animal Component-Free, Xeno-Free and Serum-Free Media

Human CB CD34$^+$ cells, isolated using the EasySep™ Human Cord Blood CD34 Positive Selection Kit (Catalog #18096) or the EasySep™ Human Progenitor Cell Enrichment Kit (Catalog #19056), were plated at a cell concentration of 10 000 per mL and cultured for seven days in StemSpan™-ACF, StemSpan™ H3000 (xeno-free) or StemSpan™ SFEM (serum-free) media, supplemented with StemSpan™ Cytokine Cocktail 100 (CC100).* Expanded cells were stained with anti-human CD34 and CD45. 7-AAD was used to distinguish non-viable cells. Cells were collected and counted by flow cytometry.

All three media supported similar levels of total nucleated cell (TNC) expansion, but CD34$^+$ cell expansion was significantly higher in StemSpan™-ACF compared to StemSpan™ SFEM and StemSpan™ H3000 (Figure 1). Similar results were obtained with the StemSpan™ CC110* cytokine cocktail and with CD34$^+$ cells purified from bone marrow (data not shown).

*StemSpan™ CC100 contains both early- and late-acting cytokines (rh SCF, rh Flt-3 Ligand, rh IL-3 and rh IL-6) to promote CD34$^+$ cell expansion and generate large numbers of progenitors and mature cells in culture. StemSpan™ CC110 contains early-acting cytokines (rh SCF, rh Flt-3 Ligand and rh TPO) to activate stem cell and immature progenitor cycling, without promoting proliferation and differentiation of later progenitors.

Advantages of StemSpan™-ACF:

- Defined, animal component-free formulation (does not contain animal- or human-derived components)
- Increased consistency
- Decreased risk of introducing adventitious agents

Applications of StemSpan™-ACF**

- Expansion of hematopoietic cells from bone marrow, mobilized peripheral blood and cord blood
- Generation of large numbers of mature blood cells or lineage-specific cells including:
  - Granulocytes
  - Monocytes/macrophages
  - Dendritic cells
  - Megakaryocytes
- Expansion of stem cells capable of reconstituting hematopoiesis after transplantation

**Optimization of culture conditions may be required for each application and for different cell preparations.

Ordering Information

PRODUCT	QUANTITY	CATALOG #
StemSpan™-ACF New	100 mL	09805
	500 mL	09855

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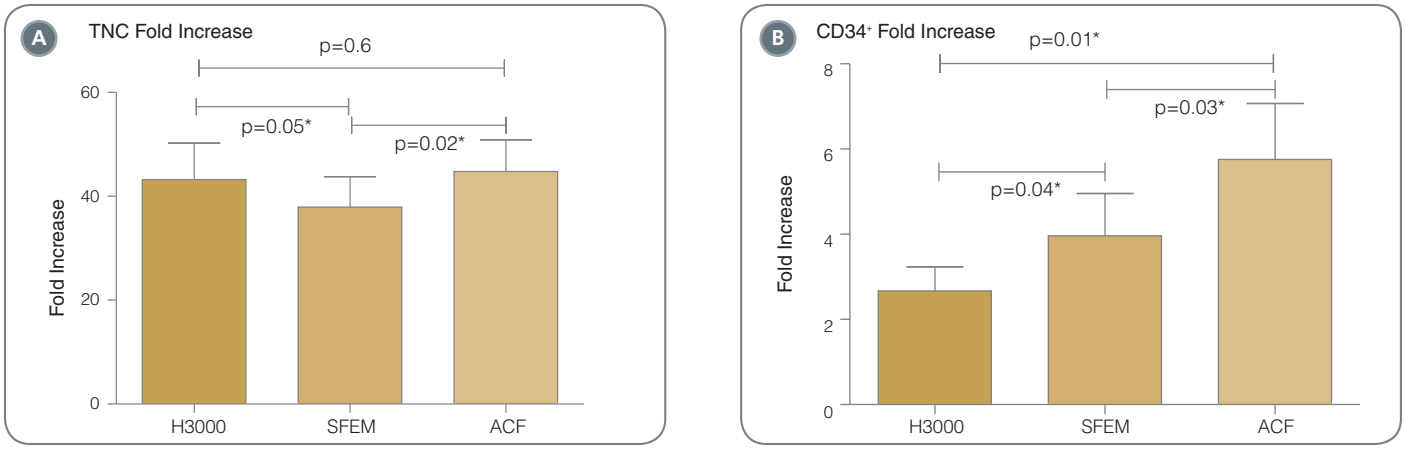
FIGURE 1. Expansion of TNC and CD34⁺ cells in cultures of human CB hematopoietic cells in StemSpan™ H3000, SFEM and ACF, supplemented with the StemSpan™ CC100 cytokine cocktail



*Significant difference, paired t-test.

Results show the average ± one standard deviation (n = 10) for TNC and CD34⁺ cell fold increase after seven days of culture.

Related Products

PRODUCT	DESCRIPTION	QUANTITY	CATALOG #
StemSpan™ H3000	Xeno-free, serum-free defined medium for expansion of hematopoietic cells	100 mL	09800
		500 mL	09850
StemSpan™ SFEM	Serum-free medium for expansion of hematopoietic cells	100 mL	09600
		500 mL	09650
StemSpan™ CC100	Cytokine cocktail for culture and expansion of human hematopoietic cells; contains both early- and late-acting cytokines to generate large numbers of progenitors and mature cells in culture Contains recombinant human rh Flt-3 Ligand, rh SCF, rh IL-3, rh IL-6	1 mL (100X concentrate)	02690
StemSpan™ CC110	Cytokine cocktail for culture and expansion of human hematopoietic cells; contains early-acting cytokines for use in short-term cultures to activate stem cell and immature progenitor cycling, without promoting the proliferation and differentiation of later progenitors Contains rh Flt-3 Ligand, rh SCF, rh TPO	1 mL (100X concentrate)	02697
StemSpan™ CC220	Culture, expansion and differentiation of human megakaryocytic progenitors; generates large numbers of megakaryocytes and mature platelets, with minimal expansion of cells from other lineages	1 mL (100X concentrate)	02696

Abbreviations

rh = recombinant human
SCF = stem cell factor
IL = interleukin
TPO = thrombopoietin
CC = cytokine cocktail
TNC = total nucleated cell
ACF = animal component-free
SFEM = serum-free expansion medium