Datasheet

SERAplex NTS

Defined Serum Substitute for Suspension Cells

Product	Description	Catalogue-No.	Size
SERAplex NTS	**Serum substitute with defined components for non-adherent cells in suspension**	**ST04-95080** **ST04-95800** **ST04-95850**	**50 ml** **100 ml** **500 ml**

Product description
SERAplex NTS is a ready-to-use, chemically defined serum substitute for the cultivation of suspension cells under serum-free conditions or to significantly reduce the amount of serum in cell culture. It supports the growth of many non-adherent cell types in an optimum manner without any extra handling compared to serum.

Storage conditions
Storage: -20°C (in the dark)
Stability: 2 years from date of production
Size: 50 ml, 100 ml, 500 ml, other sizes on request

Composition
SERAplex NTS contains purified proteins, lipids, salts, amino acids, trace elements, and hormones in an optimized formulation and a new 3-dimensional substance release system (3D-SRS). SERAplex NTS contains no growth factors, undefined hydrolysates or peptones.

Suitability
SERAplex NTS is suitable for the cultivation of a variety of non-adherent cells under serum-free culture conditions (please see figure 1 for examples) or to reduce the necessary FBS amount in cell culture.

Special advantages
SERAplex NTS is designed to replace or to reduce serum in the cell culture in a very simple manner. In most cases there is no need to change the basal medium. As SERAplex NTS is fully chemically defined and contains no peptones or hydrolysates, lot testing is no more necessary. It also allows high reproducibility and a simplified downstream process. SERAplex NTS contains no growth factors and enables defined proliferation and differentiation of stem cells. Characterization studies of growth factors will obtain more reproducible and clearer results. SERAplex NTS is also useful to develop sensitive cell-based *in vitro* tests and coculture procedures. For cell lines which require specific growth factors these should be added in a concentration as previously used.

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Growth stimulation in different cell lines

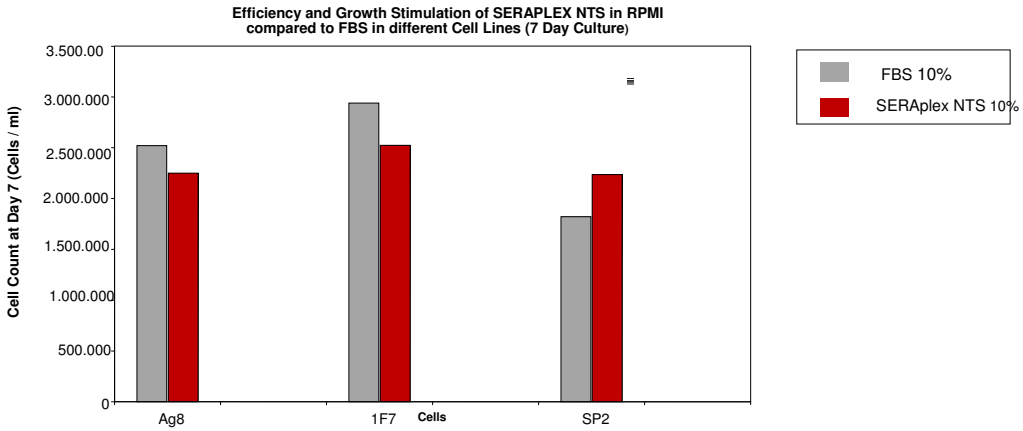

Fig. 1: Efficiency and growth stimulation of SERAplex NTS compared to FBS (each 10% in RPMI)

Instructions for use

SERAplex NTS can be stored and used in the same manner as serum.

- Thaw SERAplex at maximum 37 °C. Please avoid repeated freeze-thaw cycles!
- To replace serum: Use the same basal medium and the same concentration of SERAplex as FBS. The performance can be further improved by optimizing the concentration of SERAplex or modifying/changing the basal medium[a] (Table 1)
- To reduce serum concentration: Use the same basal medium and add the same amount of SERAplex as the reduced amount of serum, until the minimal necessary concentration of FBS is found (1 to 2.5 % in most cases). The performance can be further improved by optimizing the the concentration of SERAplex or modifying/changing the basal medium[a] (also see adaptation instruction and table 1).
- Recommended inoculation cell density: $5x10^4$ – $10x10^5$ cells/ml[2].

Depending on the cell type, some differences in morphology or proliferation rate may be observed with varying standard media. Most applications were performed with DMEM and DMEM/F12 for adherent cells. Make sure that L-glutamine is present in sufficient quantity. The optimal SERAplex concentration should be determined for each cell line. Tests can be started at a SERAplex concentration of 10%, as with most cells the best results were obtained at this concentration.

Please note that for more demanding cells an adaptation to SERAplex NTS may be necessary.

Adaptation instructions for SERAplex NTS

Precondition for a successful transition are vital cells (trypan blue exclusion staining), which should be harvested in the logarithmic growth phase. If 10% FBS was used in the original protocol,

Step 1: 7.5 % FBS + 2.5 % SERAplex

- Seed cells at $5x10^4$ – $10x10^5$ cells/ml.
- Observe cells under a microscope, at about 90 % confluence passage the cells for another 2-3 passages.

If normal growth is obtained transfer cells into:

Step 2: 5 % FBS + 5 % SERAplex

- Seed cells at $5x10^4$ – $10x10^5$ cells/ml.
- Observe cells under a microscope, at about 90 % confluence passage the cells for another 2-3 passages.

If normal growth is obtained transfer cells into:

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Step 3: 2.5 % FBS + 7.5 % SERAplex

- Seed cells at $5x10^4$ – $10x10^5$ cells/ml.
- Observe cells under a microscope, at about 90 % confluence, passage the cells for another 2-3 passages.

If normal growth is obtained transfer cells into:

Step 4: 1 % FBS + 9 % SERAplex

- Seed cells at $5x10^4$ – $10x10^5$ cells/ml.
- Observe cells under a microscope, at about 90 % confluence, passage the cells for another 2-3 passages.

If normal growth is obtained transfer cells into:

Step 5: 10 % SERAplex

- Seed cells at $5x10^4$ – $10x10^5$ cells/ml.

Observe cells under a microscope.

For some cells an adaptation to serum-free conditions is difficult to reach or even impossible.
The following measures may help to facilitate a successful adaptation:

- Reseeding with a higher cell amount (about 2x to 4x of the usual cell density).
- Addition of growth factors (if known, which factors have a positive effect on the relevant cells).
- Change of basal medium. **Note:** A change of the basal medium to a richer or more complex formulation may be all that is needed to achieve growth in serum-free condition.

Table 1: Comparison of Cell Growth in 10% SERAplex NTS in different Basal Media versus Cell Growth in 10% FBS in different Basal Media

Cell Line	Origin	Basal Medium	Percentage of Growth 10% SERAplex NTS	Percentage of Growth 10% FBS
U-937	Lymphoma, human	alpha-MEM	107%	100%
		DMEM/F12	15%	
		DMEM	20%	
MM6	Monocytes, human	RPMI 1640	120%	100%
		McCoy's 5A	143%	
		DMEM/F12	118%	
HL-60	Promyelocytic leukemia cells, human	RPMI 1640	92%	100%
		DMEM/F12	14%	
		DMEM	11%	
X63-Ag8	Myeloma	DMEM	94%	100%
		RPMI 1640	97%	
		DMEM/F12	29%	

Technical support

For technical support, questions or remarks please contact your local PAN-Seratech partner or the technical department of PAN-Seratech via email (info@pan-seratech.com) or phone +49-8543-601630.

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[a] As a basal medium, standard media such as RPMI 1640, DMEM (high or low glucose), DMEM/F12, IMDM etc. can be used. Make sure that L-glutamine is present in sufficient quantity (supplement L-glutamine as needed).