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Product Information

Media Supplements: ITS, SITE, SPITE, Fatty Acid-Albumin Supplements

Catalog Numbers **I1884, S5666, S4920, I3146, I2521, I2771, S5295, L9655, L9530, and O3008**

Product Description

Most cells will not survive or exhibit optimal phenotypic properties for any length of time when cultured in basal medium alone. They require supplementation with additional growth and survival factors, such as hormones, transport proteins, trace elements, or ECM factors. Traditionally, serum has been the supplement of choice to provide these factors. However, many investigators prefer to work in a serum-free culture environment to avoid the variability and contaminants that can be introduced by serum.

Serum-free formulations that substitute a purified form of the factors normally supplied by serum are suitable for many *in vitro* growth and differentiation studies. These factors include insulin, transferrin, selenium, pyruvate, and ethanolamine. Addition of other components varies greatly, depending on the cell type being studied and the basal medium employed.

Role of Supplement Components

Insulin - a polypeptide hormone that promotes the uptake of glucose and amino acids, and may owe observed mitogenic effect to this property.

Transferrin - an iron-transport protein. Iron is an essential trace element, but can be toxic in the free form. To nourish cells in culture, iron is supplied bound to transferrin in serum.

Selenium - an essential trace element normally provided by serum.

Sodium Pyruvate - shown to be beneficial as an additional energy source in some instances.

Ethanolamine - plays a significant role in the proliferation of hybridoma cells and frequently is added to supplements used for culturing these cells.

Media Supplements

Nutritional studies indicate the described supplement components are utilized by most mammalian cells. They enhance cell proliferation and decrease the serum requirement of many cell types. When the following supplements are used with 2–4% serum, proliferation is reported to be similar to medium supplemented with 10% serum.

ITS - a mixture of insulin, human transferrin (partially iron-saturated), and sodium selenite. It is a general cell supplement designed for use in non-complex media (e.g., MEM, RPMI-1640) and complex media (e.g., Ham's F-12, DME/F-12, MEM) *with* sodium pyruvate.

SITE - a mixture of recombinant human insulin, human transferrin (partially iron-saturated), sodium selenite, and ethanolamine. It is a general cell supplement designed for use in non-complex media (e.g., MEM, RPMI-1640) and complex media (e.g., Ham's F-12, DME/F-12, MEM) *with* sodium pyruvate.

SPITE - a mixture of recombinant human insulin, human transferrin (partially iron-saturated), sodium selenite, sodium pyruvate, and ethanolamine. It is designed for cell cultures in which media *without* sodium pyruvate are used.

Fatty Acid-Albumin - complexes have been employed as alternative sources of lipids in the development of serum-free media. Fatty acids bind to serum proteins in high proportions. Such proteins may release beneficial fatty acids and bind those that are inhibitory. Oleic acid bound to BSA has been shown to be beneficial to the growth of a variety of cell types (e.g., BHK, hybridoma). Similar observations have been made regarding linoleic acid, a precursor of prostaglandins. A mixture of poly-unsaturated and monosaturated fatty acids (i.e., linoleic acid and oleic acid) used as a media supplement has been reported to exhibit a synergistic effect.

Media Supplement Formulation Table

All these products are sold at 100× concentration.

The concentration in the vial is 100× value shown in the table with the exception of ITS I1884, which is in powder form.

Final 1× Concentration in medium (except I1884)	SPITE S5666	SITE S4920	ITS I3146	ITS+1 I2521	ITS+3 I2771	SITE+3 S5295	FAC+LO L9655	FAC+L L9530	FAC+0 O3008	ITS I1884 vial content*/ Final 1× Conc.
Insulin mg/L	10	10	10	10	10	10				25 mg/5 mg/L
Transferrin mg/L	5.5	5.5	5.5	5.5	5.5	5.5				25 mg/5 mg/L
Selenium μg/L	5	5	5	5	5	5				25 μg/5 μg/L
Pyruvate mg/L	110									
Ethanolamine mg/L	2	2				2				
BSA mg/mL				0.5	0.5	0.5	1	1	1	
Linoleic acid μg/mL				4.7	4.7	4.7	9.4	9.4		
Oleic acid μg/mL					4.7	4.7	9.4		9.4	

*****I1884 is in powder form. A 100× stock solution can be made by dissolving the vial contents in 50 mL of sterile acidified water.

References

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