

# ITSE Animal-Free

## Guidelines for Use

### ITSE Animal-Free (rInsulin-rTransferrin-Selenium-Ethanolamine)

Animal-Free, Chemically Defined, Sterile

Cat. Number: 777ITS032

Storage Conditions: 2-8° C tightly sealed, avoid unnecessary air and light exposure.

### Introduction

Insulin, transferrin, selenium and ethanolamine are typically required for optimal cell growth in serum-free media (1). Ethanolamine is a phospholipid precursor that improves the performance of cells in serum-free media (2) and is required for the growth of some cell types (3). Insulin has cell signaling functions and promotes the uptake of glucose and amino acids (4). Transferrin is a non-toxic carrier of iron and reduces the generation of toxic free-radicals and peroxide (5). Selenium is required for the activity of glutathione peroxidase, thioredoxin reductase, and other antioxidant enzymes (6).

### Applications

InVitria's ITSE Animal-Free supplement replaces animal-derived ITS and ITSE products. ITSE Animal-Free may be used with F12, DMEM/F12, DMEM, IMDM and other media formulations. In addition, ITSE Animal-Free may also improve the performance of serum-free commercial formulations. The components of ITSE Animal-Free are animal-free and animal-derivative free. ITSE Animal-Free is prepared as a 100x sterile concentrate in Earle's balanced salt solution.

Components:	Concentration (g/L)
Recombinant human insulin	1.00
Recombinant human transferrin	0.55
Sodium selenite	0.00067
Ethanolamine	0.20

### Instructions for use

ITSE Animal-Free is a 100x sterile concentrate. 10 ml of ITSE Animal-Free will supplement one liter of medium. The degree of serum-reduction depends on the base medium and the cell type. For serum-free cell growth InVitria recommends using DMEM/F12 or other robust serum-free base medium in combination with ITSE Animal-Free. Some cell types may show additional benefit by supplementing media with ITSE Animal-Free at 2x final concentration.

### References

1. Ozturk, S. S, Paulson, B.O. Effect of initial cell density on hybridoma growth, metabolism, and monoclonal antibody production. *J. Biotechnol.* 1990. 16:259-78.
2. Murakami, H., Masui, H., Sato, G. H., Sueoka, N., Chow, T.P., Kano-Sueoka, T. Growth of hybridoma cells in serum-free medium: Ethanolamine is an essential component. 1982. *Proc. Natl. Acad. Sci. USA* 79:1158-1162.
3. Tsao, M.C., Walthall, B.J., Ham, R.G. 1982. *Clonal growth of normal human epidermal keratinocytes in a defined medium.* *J. Cell Physiol.* 110(2):219-229.
4. Czech, M.P. 1977 Molecular mechanism of insulin action. 1977. *Ann. Rev. Biochem.* 46:359-384.
5. Aisen, P. *Iron in Biochemistry and Medicine*, ed. Jacobs. A. and Worwood, M., Academic Press, New York., pp.87-129 (1980).
6. Saito Y, Yoshida Y, Akazawa T, Takahashi K, Niki E. 2003. Cell death caused by selenium deficiency and protective effect of antioxidants. *J. Biol. Chem.* 278(41):39428-34.

For further information on ITSE Animal-Free contact InVitria technical support at 1-800-916-8311. ITSE Animal-Free is for research or further manufacturing use only.