



## Insulin-Transferrin-Selenium - X 100X

(For use with media already containing Sodium Pyruvate)

**CAUTION:** Human origin materials are non-reactive (donor level) for anti-HIV 1 & 2, anti-HCV, and HBsAg. Handle in accordance with established bio-safety practices

**Cat. No.:** 51500 **10 mL**

**Storage Conditions:** 2 to 8°C

### Introduction

Insulin, selenium, and transferrin have been shown to be components which are required for optimal performance of serum-free media.<sup>1</sup> Insulin has pleiotropic anabolic effects on mammalian cells. It promotes glucose and amino acid uptake, lipogenesis, monovalent cation and phosphate transport, protein and nucleic acid synthesis.<sup>2,3</sup> Transferrin serves as a carrier for iron.<sup>4</sup> It may also help to reduce toxic levels of oxygen radicals and peroxide.<sup>5</sup> Selenite is a co-factor for glutathione peroxidase and other proteins<sup>6,7</sup> and is used as an anti-oxidant in media.<sup>8</sup> Ethanolamine can serve as a precursor for the biosynthesis of phospho-glycerides which are essential to the structure of the plasma membrane and cellular organelles.<sup>9,10,11</sup>

### Description

Insulin-Transferrin-Selenium - X supplementation to many conventional synthetic nutrient media permits substantial reduction in the FBS requirement for routine maintenance of many cell types. GIBCO Insulin-Transferrin-Selenium - X Supplement contains Sodium Selenite, Insulin, Transferrin and Ethanolamine prepared in Earle's Balanced Salt Solution without Phenol Red. Each 10 mL vial of Insulin-Transferrin-Selenium - X will supplement one liter of medium. Insulin-Transferrin-Selenium - X is designed as a supplement for F-12 Nutrient Mixture, Dulbecco's Modified Eagle Medium/F-12 Nutrient Mixture and Earle's Minimal Essential Medium and will enhance the growth of various cell types at Fetal Bovine Serum concentrations less than or equal to 4%.

Formulation (Prepared in Earle's Balanced Salt Solution w/o Phenol Red):

Component	Concentration(g/L)
Sodium Selenite (anhydrous)	0.00067
Insulin	1.00
Transferrin	0.55
Ethanolamine	0.20

### Instructions for Use

GIBCO Insulin-Transferrin-Selenium - X is a 100X supplement which is added to conventional media at a ratio of 10 mL of Insulin-Transferrin-Selenium - X per liter of medium. In general, it is necessary to add 2 to 4% Fetal Bovine Serum to achieve optimal growth.

### Quality Control Testing

Each lot of Insulin-Transferrin-Selenium - X is tested for performance by determining the plating efficiency of Vero cells at 50 and 100 cells/well in a 6-well dish in F-12 Nutrient Mixture supplemented with 1% Insulin-Transferrin-Selenium - X and 1% FBS.

The relative plating efficiency must be at least 80% of the reference control F-12 Nutrient Mixture +10% FBS.

### References:

- 1 Bottenstein, J., Hayashi, I., Hutchings, S., Masui, H., Mather, J., McClure, D.B., Ohasa, S., Rizzino, A., Sato, G., Serrero, G., Wolfe, R. and Wu, R. *Methods in Enzymology*, vol. LVIII pp. 94-109, Academic Press, New York (1979).
- 2 Czech, M.P. *Ann. Rev. Biochem.*, **46**: 359-384 (1977).
- 3 White, A., Handler, P. and Smith, E.L. *Principles of Biochemistry*, McGraw Hill, New York (1973).
- 4 Aisen, P., *Iron in Biochemistry and Medicine*, ed. Jacobs, A. and Worwood, M., Academic Press, New York, pp. 87-129 (1980).
- 5 Willson, R.L. *Iron Metabolism*, Ciba Foundation Symposium 51, (New Series), Elsevier, Amsterdam, pp. 331-349 (1977).
- 6 Combs, G.F.Jr. and Combs, S.B., *The Role of Selenium in Nutrition*, pp.205-263 (1986).
- 7 Gill, G.N., Crivello, J.F., Hornsby, P.J. and Simonian, M.H. *Growth of Cells in Hormonally Defined Media*, pp. 461-482, ed. Sato, G.H., Pardee, A.B. and Sirbasku, D.A. Cold Spring Harbor Laboratory (1982).
- 8 Stadtman, T.C. *FASEB, J.*, pp. 375-379 (1987).
- 9 Bell, R.M. and Coleman, R.A. *Ann. Rev. Biochem.*, **49**: 459-487 (1980).
- 10 Kanfer, J.N. *J. Biochem.*, **58**, 1370-1380 (1980).
- 11 Voelker, D.R. *Proc. Nat. Acad. Sci., U.S.A.*, **81**, 2669-2673 (1984).

For further information on this or other GIBCO® products, contact Technical Services at the following:

United States TECH-LINE<sup>SM</sup> : 1 800 955 6288  
Canada TECH-LINE: 1 800 757 8257

Outside the U.S. and Canada, refer to the GIBCO products catalogue for the TECH-LINE in your region.

You may also contact your Invitrogen Sales Representative or our World Wide Web site at [www.invitrogen.com](http://www.invitrogen.com).

For research use only.

**CAUTION: Not intended for human or animal diagnostic or therapeutic uses.**