GIBCO™
Invitrogen Corporation

Insulin-Transferrin-Selenium - A
100X

(For Use in Adherent Cultures)

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

Cat. No.: 51300 **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.[1] 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.[2,3]
Transferrin serves as a carrier for iron.[4] It may also help to reduce toxic levels of oxygen radicals and peroxide.[5] Selenite is a co-factor for glutathione peroxidase and other proteins[6,7] and is used as an anti-oxidant in media.[8]
Pyruvate is an important intermediate in a number of biosynthetic pathways. It is a precursor to amino acids, fatty acids, cholesterol, can be utilized in the Krebs' cycle, and in gluconeogenesis.[9,10]

Description

Insulin-**T**ransferrin-**S**elenium - **A** supplementation to many conventional synthetic nutrient media permits substantial reduction in the FBS requirement for routine maintenance and low density attachment of many adherent cell types. GIBCO **I**nsulin-**T**ransferrin-**S**elenium - **A** Supplement contains Sodium Selenite, Sodium Pyruvate, Insulin and Transferrin prepared in Earle's Balanced Salt Solution without Phenol Red. Each 10 mL vial of **I**nsulin-**T**ransferrin-**S**elenium - **A** will supplement one liter of medium. **I**nsulin-**T**ransferrin-**S**elenium - **A** is designed as a supplement for RPMI-1640 and Earle's Minimal Essential Medium, and will enhance the growth of various adherent cell types at Fetal Bovine Serum concentrations less than 4%.

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

Component	**Concentration(g/L)**
Sodium Selenite (anhydrous)	0.00067
Sodium Pyruvate	11.00
Insulin	1.00
Transferrin	0.55

GIBCO **I**nsulin-**T**ransferrin-**S**elenium - **A** is a 100X supplement which is added to conventional media at a ratio of 10 mL of **I**nsulin-**T**ransferrin-**S**elenium - **A** per liter of medium. In general, it is necessary to add 2 to 4% Fetal Bovine Serum to achieve optimal growth, although some adherent cultures may require less serum supplementation following initial adaptation.

Quality Control Testing

Each lot of **I**nsulin-**T**ransferrin-**S**elenium - **A** is tested for performance by determining the plating efficiency of Vero cells at 50 and 100 cells/well in a 6-well dish in Earle's MEM supplemented with 1% **I**nsulin-**T**ransferrin-**S**elenium - **A** and 1% FBS.
The relative plating efficiency must be at least 80% of the reference control Earle's MEM + 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.1*, pp. 375-379 (1987).
9. Hers H.G. and Hue, L. *Ann. Rev. Biochem.*, **52**: 617-653 (1983).
10. Lehninger, A.L. *Biochemistry*, North Publishers, New York (1973).

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

United States TECH-LINE℠: 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.

For research use only.
CAUTION: Not intended for human or animal diagnostic or therapeutic uses.

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