



Glutathione reduced

Cell Culture Tested

Product Code: TC134

Product Description :

Molecular Weight: 307.32 Molecular Formula: $C_{10}H_{17}N_3O_6S$ CAS No.: 70-18-8 Synonym: γ -L-Glutamyl-L-cysteinyl-glycine, GSH

Glutathione is a tripeptide composed of 3 amino acids, Cysteine, Glutamic acid and Glycine. Cysteine is a thiol containing amino acid and is a rate-limiting precursor in glutathione. Glycine plays important role in anti-bacterial activities and inhibition of tumor growth as a precursor of nucleotide synthesis in cell proliferation. Glutamic acid plays important role in cell proliferation and apoptosis.

Glutathione is used as a major component of cell culture media like RPMI-1640, McCoy's 5A media, Medium 199 and some of the MCDB media. It plays many important roles in cell culture systems.Some of them are mentioned below:

1. Antioxidant activity:

Glutathione is a cofactor for enzymes such as Glutathione peroxidase and Glutathione-S-transferase. These enzymes play important role in preventing lipid peroxidation. Thiol group of Cysteine participates in redox reactions. It can donate or accept single electron equivalents. This property of glutathione makes it a useful antioxidant in cell culture media. It converts intra- and extra-cellular peroxides and hydroperoxides to water and other organic solvents. If not removed from the culture media, these molecules form harmful reactive radicals.

2. Detoxification activity:

Glutathione removes toxins, xenobiobiotics and heavy metals from culture media. Intracellular concentration of this tripeptide determines sensitivity of the cells to radiation and drug-induced cytotoxicity.

3. Regulatory activity:

Glutathione play an important role in regulation of protein turnover and protein folding. It is assumed to be a major source of oxidizing equivalents needed for formation of disulfide linkages associated with protein folding.

4. Role in cell proliferation:

Different studies indicate that glutathione promotes proliferation of different types of cells such as human fibroblast cells, lymphocyte, hepatocytes, mouse bone marrow cells and intestinal epithelial cells.

5. Regulation of protein turnover:

Glutathione facilitates transport of amino acids into cells. Also,glutathione reduces cystine and cysteinemixed disulphides to cysteine, thus making cysteine available for protein synthesis.

Directions :

Preparation instructions :

Solutions of the desired concentrations can be prepared in water.

Solutions can be sterilized by filtering through a sterile membrane filter with a porosity of 0.22 microns or less using positive pressure.

Quality Control:

Appearance

White powder.

Solubility

Clear colorless solution at 5gm in 100ml of water.Clear, colorless solution at 0.614gm in 0.605% Tris base.

Specific optical rotation [alpha]²⁰

-15.5° to -17.5°

Residue on Ignition NMT 0.1%

Loss on drying (105°C; 1 h) NMT 0.5%

Assay 98.00 %

Cell Culture Test Passes

Storage and Shelf Life:

Aqueous solution of glutathione reduced readily oxidized to oxidized form of glutathione. Store at 2°-8°C Shelf life of product is 48 months. Use before expiry date given on product label.

Disclaimer :

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