Technical Bulletin

Trypsin inhibitor from Glycine max (soybean)

Solution, sterile-filtered, suitable for, suitable for cell culture

T6414

Storage Temperature -20 °C

Product Description

CAS Number

9035-81-8

Extinction Coefficient

$E^{1\%}$ = 9.94 (280 nm, pH 7.6 buffer)

pI

4.5[1]

Synonyms

Kunitz Trypsin Inhibitor, Ti^{a1}, STI, and SBT1

This product is a 1% solution of trypsin inhibitor in Dulbecco's PBS without calcium and magnesium. There is also added a small amount (2% v/v) of charcoal stripped FBS to stabilize the cell membrane. This product does contain some α;1 antitrypsin activity.

This product is cell culture tested and is appropriate for use in cell culture applications. It has been optimized for passage of endothelial cell cultures.

Soybean trypsin inhibitor was first isolated by Kunitz.[2] Several other related inhibitors are also found in soybeans.[3] Trypsin inhibitor from soybeans is a monomeric protein containing 181 amino acid residues in a single polypeptide chain crosslinked by two disulfide bridges.[4,5,6] The molecular weight determined from the amino acid sequence is 20.1 kDa.

Soybean trypsin inhibitor inhibits trypsin, and to a lesser extent chymotrypsin[8] and plasmin.[9] Soybean trypsin inhibitor will also inhibit proteases with mechanisms similar to trypsin. This product will also inhibit plasma kallikrein and coagulation Factor X_a. However, this product will not inhibit metalloproteases, tissue-based kallikrein, acid proteases, or thio proteases.

Soybean trypsin inhibitor forms a 1:1 stoichiometric complex with the protease active site. Upon formation of this complex, trypsin may cleave a single arginine- isoleucine bond on the inhibitor.[10,11] Inhibition is both reversible and pH dependent. Dissociation of this complex may yield a modified or native form of the inhibitor.[12] The optimal pH for trypsin binding is 8.0 with an association constant of greater than 109 at pH 8.0 and 0.15-2.6 x 10^4 at pH 3.6 to 4.4.[13]

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses.

Storage/Stability

This product is stable in frozen aliquots at -20 °C, but freeze-thaw should be avoided. This protein is reversibly denatured by short heating to 80 °C and irreversibly inhibited by heating to 90 °C.[3]

Procedure

After trypsinizing cells, resuspend cells in 1 mL trypsin inhibitor solution (1 mg/mL) for every mL of trypsin solution used for dissociation. Centrifuge the cell suspension at 1000 rpm (200 x g) for 5 minutes. A cell pellet should form. Remove as much of the trypsin inhibitor as possible and resuspend the pellet in serum-free medium. Culture cells as desired.

References

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