Active Transglutaminase 2 (TGM2)

Catalog#:PEH12751

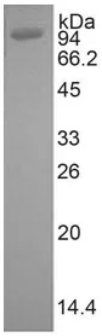
概述（Summary）

别称（Alternative Names）	tTG; TG2; C Polypeptide,Protein-Glutamine-Gamma-Glutamyltransferase; Transglutaminase 2, Tissue; Transglutaminase C; Transglutaminase H
纯度（Purity）	Greater than 95% as determined by reducing SDS-PAGE.
内毒素（Endotoxin level）	Please contact with the lab for this information
蛋白构建（Construction）	【Met1-Ala687】
Accession #	P21980
表达宿主（Host）	E.coli
种属（Species）	Homo sapiens (Human)
预测分子量（Predicted MW）	78.6 kDa
制剂（Form）	Lyophilized from a 0.2 μm filtered solution of PBS, pH7.4, containing 0.01% SKL, 1mM DTT, 5% Trehalose and Proclin300.
运输方式（Shipping）	The product is shipped with ice bag. Upon receipt, store it immediately at the temperature listed below.
稳定性&储存（Stability &Storage）	12 months at -20°C to -80°C in lyophilized state.6 months at -20°C to -80°C under sterile conditions after reconstitution.7-10 days at 2°C to 8°C under sterile conditions after reconstitution.Please minimize freeze-thaw cycles.
复溶（Reconstitution）	Reconstitute in 10mM PBS (pH7.4) to a concentration of 0.1-1.0 mg/mL. Do not vortex.
背景介绍（References）	Calcium-dependent acyltransferase that catalyzes the formation of covalent bonds between peptide-bound glutamine and various primary amines, such as gamma-amino group of peptide-bound lysine, or mono- and polyamines, thereby producing cross-linked or aminated proteins, respectively. Involved in many biological processes, such as bone development, angiogenesis, wound healing, cellular differentiation, chromatin modification and apoptosis. Acts as a protein-glutamine gamma-glutamyltransferase by mediating the cross-linking of proteins, such as ACO2, HSPB6, FN1, HMGB1, RAP1GDS1, SLC25A4/ANT1, SPP1

and WDR54. Under physiological conditions, the protein cross-linking activity is inhibited by GTP; inhibition is relieved by Ca(2+) in response to various stresses. When secreted, catalyzes cross-linking of proteins of the extracellular matrix, such as FN1 and SPP1 resulting in the formation of scaffolds. Plays a key role during apoptosis, both by (1) promoting the cross-linking of cytoskeletal proteins resulting in condensation of the cytoplasm, and by (2) mediating cross-linking proteins of the extracellular matrix, resulting in the irreversible formation of scaffolds that stabilize the integrity of the dying cells before their clearance by phagocytosis, thereby preventing the leakage of harmful intracellular components. In addition to protein cross-linking, can use different monoamine substrates to catalyze a vast array of protein post-translational modifications: mediates aminylation of serotonin, dopamine, noradrenaline or histamine into glutamine residues of target proteins to generate protein serotonylation, dopaminylation, noradrenalinylation or histaminylation, respectively. Mediates protein serotonylation of small GTPases during activation and aggregation of platelets, leading to constitutive activation of these GTPases. Plays a key role in chromatin organization by mediating serotonylation and dopaminylation of histone H3. Catalyzes serotonylation of 'Gln-5' of histone H3 (H3Q5ser) during serotonergic neuron differentiation, thereby facilitating transcription. Acts as a mediator of neurotransmission-independent role of nuclear dopamine in ventral tegmental area (VTA) neurons: catalyzes dopaminylation of 'Gln-5' of histone H3 (H3Q5dop), thereby regulating relapse-related transcriptional plasticity in the reward system. Regulates vein remodeling by mediating serotonylation and subsequent inactivation of ATP2A2/SERCA2. Also acts as a protein deamidase by mediating the side chain deamidation of specific glutamine residues of proteins to glutamate. Catalyzes specific deamidation of protein gliadin, a component of wheat gluten in the diet. May also act as an isopeptidase cleaving the previously formed cross-links. Also able to participate in signaling pathways independently of its acyltransferase activity: acts as a signal transducer in alpha-1 adrenergic receptor-mediated stimulation of phospholipase C-delta (PLCD) activity and is

required for coupling alpha-1 adrenergic agonists to the stimulation of phosphoinositide lipid metabolism.; Has cytotoxic activity: is able to induce apoptosis independently of its acyltransferase activity.

电泳图（SDS-PAGE image）



Greater than 95% as determined by reducing SDS-PAGE.

活性图（Bioactivity image）

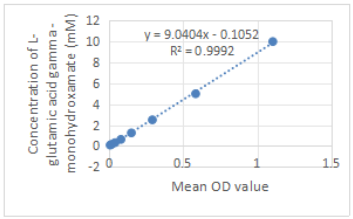


Figure 1. The standard curve of L-glutamic acid gamma -monohydroxamate

OD (525 nm)	L-glutamic acid gamma -monohydroxamate (product) mM
1.1046	10
0.5857	5
0.2946	2.5
0.1535	1.25
0.0831	0.625
0.0436	0.3125
0.0208	0.15625
0.0108	0.078125

Specific Activity (pmol/min/μg) =

$$\frac{\text{Adjusted Vmax * (OD/min) x Conversion Factor ** (pmol/OD)}}{\text{amount of enzyme (ug)}}$$

*Adjusted for Substrate Blank

**Derived using calibration standard L-glutamic acid gamma -monohydroxamate

Transglutaminase 2 (TGM2), encoded by the TGM2 gene, is belongs to the family of transglutaminases that catalyze the posttranslational modification of proteins via calcium dependent cross-linking reactions. In addition to its function in protein cross-linking, TGM2 is also capable of hydrolyzing both GTP and ATP and has intrinsic kinase activity. TGM2 has been implicated in a variety of human diseases including celiac disease, inclusion body myositis, atherosclerosis, and neurodegenerative diseases. The activity of recombinant human TGM2 is measured by its ability to cleave a synthetic peptide Benzyloxycarbonyl-Gln-Gly and NH2OH in the assay buffer 200 mM MES, 10 mM DTT, 10 mM CaCl2, 100 mM Hydroxylamine Hydrochloride, pH 6.0. The rhTGM2 is diluted to 12.5 ug/ml in assay buffer. Loading into a clear well plate 50 µL of 12.5 ug/mL rhTGM2 and start the reaction by adding 50 µL of 100 mM substrate, with a substrate blank containing 50 µL assay buffer, 50 µL substrate, and no rhTGM2. Incubated at 37 °C for 2 hours and stop the reaction with 400 ul stop solution of 0.37 M FeCl3, 0.67 M HCl，0.2 M Trichloroacetic Acid. Centrifuge at 2000 rpm for 2 minutes and then load 200 ul of the supernatant into a plate and read at 525 nm (absorbance) in endpoint mode. The specific activity of recombinant human TGM2 is > 800 pmol/min/µg.

注意事项（Note）

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