PRODUCT INFORMATION

Transglutaminase 2 (human, recombinant)

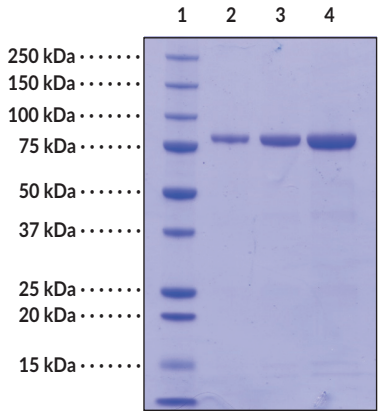
Item No. 23595

Overview and Properties

Synonyms:	TG2, TGase 2, TGase C, TGase H, TGC, TGM2, Tissue Transglutaminase, Transglutaminase C, Transglutaminase H
Source:	N-terminally His-tagged human TG2 protein (full length) purified from *E. coli*.
Amino acids:	2-687 (full length)
Uniprot No.:	P21980
Molecular Weight:	79.4 kDa
Storage:	-80°C (as supplied)
Stability:	≥1.5 years
Purity:	***batch specific*** (≥85% estimated by SDS-PAGE)
Supplied in:	50 mM HEPES, pH 7.2, with 150 mM sodium chloride, 1 mM DTT, 1 mM EDTA, and 10% glycerol
Protein Concentration:	***batch specific*** mg/ml

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers
Lane 2: Transglutaminase 2 (1 µg)
Lane 3: Transglutaminase 2 (2 µg)
Lane 4: Transglutaminase 2 (4 µg)

Representative gel image shown; actual purity may vary between each batch.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Transglutaminase 2 (TG2) is the most abundant member of the transglutaminase enzyme family that is found in the intra- and extracellular spaces of various tissues.[1] It shares a common domain structure with other TGs that includes an N-terminal β-sandwich containing integrin and fibronectin binding sites, a catalytic core for acyl transfer reactions, and two C-terminal β-barrel domains with the second containing a phospholipase C binding sequence. Unlike other TGs, TG2 has a guanidine nucleotide binding site between its catalytic core and first β-barrel. TG2 catalyzes protein crosslinking in a calcium-dependent manner, creating an inter- or intramolecular bond between the ε-amino group of a lysine residue and the γ-carboxamide group of a glutamine residue that is highly resistant to proteolysis.[2] TG2 also exhibits calcium-independent enzyme activities, including GTPase, protein kinase, and disulfide isomerase activity *in vitro* and *in vivo*.[3] Intracellular TG2 has important roles in protein stabilization, cytoskeletal regulation, and apoptosis.[1] It interacts with microtubule-associated protein tau-isoform Tau-F (Tau-4) and acetylcholinesterase, implicating TG2 in the pathology of neurodegenerative diseases. Extracellular TG2 has been linked to wound healing, receptor signaling, cell motility and adhesion, as well as stabilization of the extracellular matrix (ECM).[3]

References

1. Odii, B.O., and Coussons, P. Biological functionalities of transglutaminase 2 and the possibility of its compensation by other members of the transglutaminase family. *Scientific World Journal* **2014,** 714561, (2014).
2. Porta, R., Esposito, C., Metafora, S., *et al.* Mass spectrometric identification of the amino donor and acceptor sites in a transglutaminase protein substrate secreted from rat seminal vesicles. *Biochemistry* **30(12)**, 3114-3120 (1991).
3. Belkin, A.M. Extracellular TG2: Emerging functions and regulation. *FEBS J.* **278(24)**, 4704-4716 (2011).

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