

Background

Angiopoietin-like 3 (ANGPTL3) is a protein that is encoded by the ANGPTL3 gene^[1] and a member of the angiopoietin-like family of secreted factors. It is expressed predominantly in the liver, and has the characteristic structure of angiopoietins, consisting of a signal peptide, N-terminal coiled-coil domain, and the C-terminal fibrinogen (FBN)-like domain. The FBN-like domain in ANGPTL3 protein was shown to bind alpha-5/beta-3 integrins, and this binding induced endothelial cell adhesion and migration. ANGPTL3 may also play a role in the regulation of angiogenesis. Angptl3 also acts as dual inhibitor of lipoprotein lipase (LPL) and endothelial lipase (EL),^[2] thereby increasing plasma triglyceride, LDL cholesterol and HDL cholesterol in mice and humans.^[2] ANGPTL3 inhibits endothelial lipase hydrolysis of HDL-phospholipid (PL), thereby increasing HDL-PL levels. Circulating PL-rich HDL particles have high cholesterol efflux abilities. Angptl3 plays a major role in promoting uptake of circulating triglycerides into white adipose tissue in the fed state,^[3] likely through activation by Angptl8, a feeding-induced hepatokine,^{[4][5]} to inhibit postprandial LPL activity in cardiac and skeletal muscles,^[6] as suggested by the ANGPTL3-4-8 model.^[7] ANGPTL3 is a determinant factor of HDL level and positively correlates with plasma HDL cholesterol. In humans with genetic loss-of-function variants in one copy of ANGPTL3, the serum LDL-C levels are reduced. In those with loss-of-function variants in both copies of ANGPTL3, low LDL-C, low HDL-C, and low triglycerides are seen ("familial combined hypolipidemia").^[8]

References

1. Conklin D, et al. (1999). *Genomics*. 62 (3): 477–82.
2. Tikka A, Jauhiainen M (2016). *Endocrine*. 52 (2): 187–93.
3. Wang Y, et al. (2015). *Proc Natl Acad Sci USA*. 112 (37): 11630–5.
4. Zhang R (2012). *Biochemical and Biophysical Research Communications*. 424 (4): 786–92.
5. Ren G, et al. (2012). *Am J Physiol Endocrinology and Metabolism*. 303 (3): E334–51.
6. Fu Z, et al. (2015). *Scientific Reports*. 5: 18502. doi:10.1038/srep18502.
7. Zhang R (2016). *Open Biology*. 6 (4): 150272. doi:10.1098/rsob.150272.
8. Musunuru K, et al. (2010). *The New England Journal of Medicine*. 363 (23): 2220–7.



Genorise® Recombinant Bovine ANGPTL3 Protein

Catalog Number: GR120076

Description

Source: E coli derived

Components: Leu189-Glu459

Accession # NP_001073814.1

N-terminal Sequence Analysis: Leu189

Structure/Form: Oligomer

Predicted Molecular Mass: 29.7 kDa (monomer)

Specifications

Activity Measured by its ability to promote the expansion of E16 rat liver mononuclear cells in vitro, in the presence of recombinant mouse SCF/c-kit ligand, recombinant mouse thrombopoietin, and recombinant mouse Fit-3 ligand. The ED50 for this effect is 50-230 ng/ml in the presence of a cross-linking mouse anti-polyhistidine monoclonal antibody.

Measured by its ability to inhibit lipoprotein lipase activity. Yoshida, K. et al. (2002) J Lipid Res 43:1770. The IC50 value under conditions in which recombinant human lipoprotein lipase protein and p-nitrophenyl butyrate are present in 0.1 M NaCl, 0.5% Triton X-100, pH 7.2, is < 15 µg/ml.

Endotoxin Level: <1.0 EU per 1 µg of the protein by the LAL method.

Purity: >95%, by SDS-PAGE visualized by silver stain and quantitative densitometry by Coomassie Blue Staining.

Formulation: Lyophilized from a 0.2 µm filtered solution in PBS, NaCl and CHAPS.

Preparation and Storage

Reconstitution: Purified recombinant Bovine ANGPTL3 is an extremely hydrophobic protein that adheres strongly to surfaces. To ensure recovery, reconstitute at 10 µg/mL in sterile 4 mM HCl containing 1 mg/ml of human serum albumin.

Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage: Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months, -20 °C, as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70°C under sterile conditions after reconstitution.

DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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NOT FOR USE IN HUMANS AND ANIMALS**