

DESCRIPTION

Source *E. coli*-derived human INHBE protein
Thr237-Ser350
Accession # P58166.1

N-terminal Sequence Analysis Met-Thr237

Structure / Form Disulfide-linked homodimer

Predicted Molecular Mass 13 kDa

SPECIFICATIONS

SDS-PAGE 12-15 kDa, under reducing conditions.

Activity Measured by its ability to activate CAGA-SEAP reporter in HEK293 human embryonic kidney cells transfected with human ALK7. The ED₅₀ for this effect is 1.00-10.0 ng/mL.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Lyophilized from a 0.2 µm filtered solution in HCl with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 250 µg/mL in water.

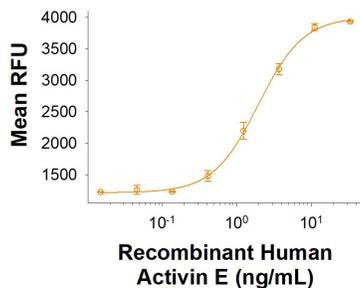
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

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

- 12 months from date of receipt, -20 to -70 °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.

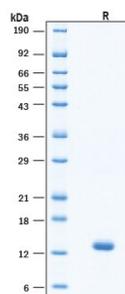
DATA

Bioactivity



Recombinant Human Activin E Protein Bioactivity. Measured by its ability to activate ALK7-dependent SEAP reporter activity in HEK293 human embryonic kidney cells. The ED₅₀ for this effect is 1.00-10.0 ng/mL.

SDS-PAGE



Recombinant Human Activin E Protein SDS-PAGE. 2 µg/lane of Recombinant Human Activin E Protein (Catalog # 11779-AE) was resolved with SDS-PAGE under reducing (R) condition and visualized by Coomassie® Blue staining, showing bands at 12-15 kDa.

BACKGROUND

Activin E, encoded by the INHBE gene, is a liver-enriched member of the transforming growth factor-beta (TGF-β) superfamily and functions as a hepatokine involved in systemic energy homeostasis. Structurally, it is a disulfide-linked homodimer of mature inhibin βE subunits, sharing the conserved cystine-knot motif characteristic of TGF-β ligands, which facilitates receptor binding and downstream signaling activation (1). Activin E signals through the type I receptor ALK7 (ACVR1C), activating the SMAD2/3 pathway and repressing PPARG target genes in adipose tissue (2). This signaling cascade suppresses β-adrenergic-induced lipolysis, thereby promoting lipid retention in white adipose tissue and preventing excessive hepatic lipid influx during metabolic stress such as fasting (2, 3). In murine models, mRNA knocked down results in increased fat oxidation, reduced adiposity, and improved metabolic profiles under high-fat diet conditions (3). Conversely, hepatic overexpression of INHBE leads to visceral fat accumulation and adipocyte hypertrophy, indicating a maladaptive role in obesity (4). Rare loss-of-function variants in human INHBE are associated with favorable fat distribution and reduced risk of type 2 diabetes, highlighting its clinical relevance (4). Expression of INHBE is upregulated by ATF4 during endoplasmic reticulum stress, linking it to nutrient sensing and adaptive metabolic responses (5). These findings underscore the potential of recombinant Activin E as a therapeutic target for metabolic disorders such as nonalcoholic fatty liver disease (NAFLD) and obesity (5).

References:

1. Morita, M. Hashimoto, O. (2019) *Molecular Biology Reports* **46**:1603.
2. Adam, R.C. *et al.* (2023) *Proc Natl Acad Sci U S A* **120**:e2309967120
3. Sugiyama, M. *et al.* (2018) *Plos one* **13**:e0194798.
4. Deaton, A.M. *et al.* (2022) *Nat Commun.* **13**: 4319.
5. Park, S.Y. *et al.* (2025) *Exp Mol Med* **57**:466.