



## CTRP9A Human E. coli

### Product Data Sheet

**Type:** Recombinant

**Source:** E. coli

**Species:** Human

**Other names:** CTRP9A, Complement C1q tumor necrosis factor-related protein 9, C1QTNF9, C1QTNF9A, UNQ6503/PRO21380

**Cat. No.:**

RD172180100 (0.1 mg)

### Description

Total 324 AA. MW: 33,7 kDa (calculated). N-Terminal His-tag, 10 extra AA (highlighted).

### Introduction to the Molecule

Complement C1q tumor necrosis factor-related protein 9 (C1q/TNF-related protein 9; CTRP9) is a highly conserved paralog of adiponectin. Of all the CTRP paralogs, CTRP9 shows the highest degree of amino acid identity to adiponectin in its globular C1q domain. CTRP9 protein exists in two isoforms, CTRP9A and CTRP9B. Although human CTRP9A and CTRP9B share 98% amino acid identity, they are encoded by distinct genes and are biochemically distinct. Human CTRP9A but not CTRP9B is expressed by adipose tissue. CTRP9B is expressed at very low levels in tissues. While CTRP9A is robustly secreted as a multimeric protein, CTRP9B requires physical association with CTRP9A or adiponectin for its secretion. CTRP9 is expressed predominantly in adipose tissue and females express higher levels of the transcript than males. Moreover, its expression levels in ob/ob mice changed in an age-dependent manner, with significant up-regulation in younger mice. Adenovirus-mediated overexpression of CTRP9 in obese (ob/ob) mice significantly lowered serum glucose levels. CTRP9 is a secreted glycoprotein with multiple post-translational modifications in its collagen domain that include hydroxylated prolines and hydroxylated and glycosylated lysines. It is secreted as multimers (predominantly trimers) from transfected cells and circulates in the mouse serum with levels varying according to sex and metabolic state of mice. Furthermore, CTRP9 and adiponectin can be secreted as heterooligomers when cotransfected into mammalian cells, and in vivo, adiponectin/CTRP9 complexes can be reciprocally coimmunoprecipitated from the serum of adiponectin and CTRP9 transgenic mice. The functional role of the plasma CTRP9 in ischemic heart disease is unknown. Systemic delivery of CTRP9 reduces myocardial infarct size and apoptosis following ischemiareperfusion in mice. CTRP9 protects cardiomyocyte from apoptosis through activation of AMP-activated protein kinase (AMPK). CTRP9 prevents acute cardiac ischemic injury via an AMPK-dependent mechanism. The data indicate that CTRP9 functions to attenuate neointimal formation following vascular injury through its ability to inhibit vascular smooth muscle cell (VSMC) growth via cAMP-dependent mechanism, suggesting that the therapeutic approaches to enhance CTRP9 production could be valuable for prevention of vascular restenosis after angioplasty. CTRP9 is a novel vasorelaxative adipocytokine which may exert vasculoprotective effects via the AdipoR1/AMPK/eNOS dependent/NO mediated signaling pathway. The vasoactive potency of CTRP9 exceeded that of adiponectin by 3-fold. Cardiac expression of CTRP9, exceeds adiponectin by >100-fold, and is significantly reduced in high-fat diet-induced diabetic mice. In H9c2 cells, TNF-alpha strongly inhibited CTRP9 expression (>60 %), and significantly reduced peroxisome proliferator activated receptor gamma (PPAR $\gamma$ ), a known transcription factor promoting adiponectin expression.

### Research topic

Cardiovascular disease, Energy metabolism and body weight regulation

### Amino Acid Sequence

**MKHHHHHHAS** QDTCRQGHPG IPGNPGHNGL PGRDGRDGAK GDKGDAGEPG RPGSPGKDGT SGEKGERGAD GKVEAKGIKG  
DQGSRGSPPGK HGPKGLAGPM GEKGLRGETG PQGQKGNKGD VGPTGPEGPR GNIGPLGPTG LPGPMGPICK PGPKEAGPT  
GPQGEPEGVRG IRGWKDRGE KKGIGETLVL PKSAFTVGLT VLSKFPSSDM PIKFDKILYN EFNHYDTAAG KFTCHIAGVY  
YFTYHITVFS RNWQVSLVKN GVKILHTKDA YMSSDQASG GIVLQLKLGD EVWLQVTGGE RFNGLFADED DDTTFTGFLF FSSP

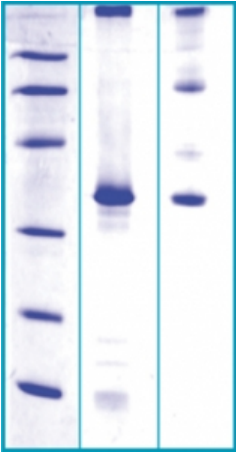
### Source

E. coli

### Purity

Purity as determined by densitometric image analysis: >95%

## SDS-PAGE gel



14% SDS-PAGE separation of Human CTRP9A

1. M.W. marker - 14, 21, 31, 45, 66, 97 kDa
2. reduced and heated sample, 5µg / lane
3. non-reduced and non-heated sample, 5µg / lane

## Formulation

0.5 mg/ml in 0.03M acetate buffer, pH=4.0 - filtered (0.4 µm), frozen

## Reconstitution

Defrost at ambient temperature. Product is not sterile! Please filter the product by an appropriate sterile filter before using it in the cell culture.

## Shipping

**At temperature 2 - 8°C** Upon receipt, store the product at the temperature recommended below.

## Storage, Stability/Shelf Life

Store protein at -80°C. Protein remains stable until the expiry date when stored at -80°C. Avoid repeated freezing/thawing cycles.

## Quality Control Test

BCA to determine quantity of the protein.

SDS PAGE to determine purity of the protein.

## Applications

Western blotting

## Note

This product is intended for research use only.

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