

Uromodulin Canine NATIVE (Canine urine)

Product Data Sheet

Type: Native	Cat. No.:	
Source: Canine urine	RD463163100	(0.1 mg)
Species: Canine		
Other names: Tamm-Horsfall urinary glycoprotein, THP, UMOD		

Description

Native protein isolated from canine urine, 589 AA, MW: 64,483 kDa (calculated without glycosylation). Protein identity confirmed by LC-MS/MS (NCBI no. gi|50950249).

Introduction to the Molecule

Uromodulin (Tamm-Horsfall protein, UMOD) is approx. 85-kDa glycoprotein that is produced in the thick ascending limb of Henle's loop and early distal convoluted tubules of the nephron. It is a transmembrane protein, which is secreted into the urine through proteolytic cleavage of the glycosylphosphatidylinositol (GPI) anchor. It belongs to the GPI family. Healthy individuals excrete tens of milligrams of uromodulin per day, making it the most abundant protein in the urine. Uromodulin modulates cell adhesion and signal transduction by interacting with cytokines and it inhibits the aggregation of calcium crystals. By reducing calcium oxalate precipitation, uromodulin plays a protective role with respect to renal stone formation as demonstrated by recent studies on THP- deficient mice prone to nephrolithiasis. THP acts as a host defense factor against urinary tract infections induced by uropathogens such as *Escherichia coli*, *Staphylococcus saprophyticus*, *Proteus mirabilis* and *Klebsiella pneumoniae*. Uromodulin binds to type 1 fimbriae of *Escherichia coli* and thereby blocks colonization of urothelial cells. Tamm-Horsfall protein interacts with other molecules and cells including IL-1, IL-2, TNF, IgG, neutrophils, lymphocytes and monocytes. Binding of uromodulin to neutrophils induces synthesis of IL-8, provokes the respiratory burst and degranulation and stimulates chemotaxis and phagocytosis. Recently, genome-wide association studies identified uromodulin as a risk factor for chronic kidney disease and hypertension. Mutations in the Uromodulin gene are associated with three autosomal dominant tubulo-interstitial nephropathies such as familial juvenile hyperuricemic nephropathy (FJHN), medullary cystic kidney disease (MCKD2) and glomerulocystic kidney disease (GCKD). These disorders are characterized by juvenile onset of hyperuricemia, gout and progressive renal failure.

Research topic

Renal disease

Amino Acid Sequence

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RSCSECHSNA TCMEDGMVTT CSCLVGFTGS GFECVDLDEC AIPGAHNCSE GSSCMNTLGS YLCTCPDGFR LTPGLGCIDV
DECSEPGLSR CHALATCINN KGNYSVCVCPA GYRGDQHCCE CSPGSCGPGL DCVPVGDALV CADPCQEHR I LDEYWRST EY
GAGYTCDVGL NGWYRFTGPG GVRLAETCVP VLHCNTAAPM WLNTHPTRD QGIVNRTACA HWRGHCCLDW ASIQVKACAG
GYVYVNLFTET PECYLAYCTD PTSVLGTCEE CSVEEDCKSH DGMWSCQCKQ DFNVTDLFLL DRLECRPNDI KVSLSKCQLK
SLGFVKVFMV LRDSQCSGFN ERGDRDWVSV VTPARDGPCG TVMVRNETHA TYSNTLYLAD EIVIRDRNIK INFECYPLD
MKVSLETSLQ PIVSSLNISV GGTGMFTVRM ALFQTPDYTQ PYQGSSVTLT TEAFLYVGTM LDGGDLRF A LLMTNCYATP
SSNATDPLKY FIIQDRCPRT TDSTIQVVEN GESPQGRFSV QMFRFAGNYD LVYLHCEVYL CDIINEKCKP TCSGTRFRSG
GIIDQSRVLN LGPITRKNVQ AVVSRAASS
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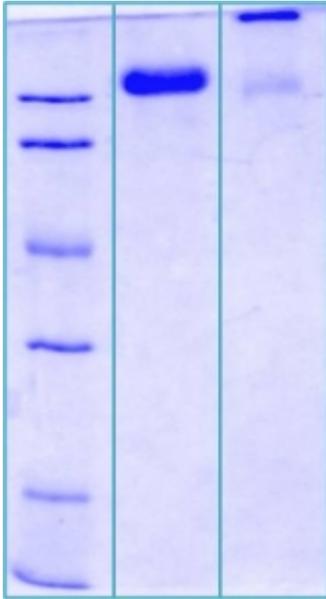
Source

Canine urine

Purity

>95%

SDS-PAGE gel



SDS-PAGE analysis of canine uromodulin native protein,
12% gel stained with Coomassie Brilliant Blue G250

- 1) M.W. marker - 14, 21, 31, 45, 66, 97 kDa
- 2) reduced and heated sample, 2.5ug/lane
- 3) non-reduced and non-heated sample, 2.5µg/lane

Endotoxin

< 1.0 EU/ug

Formulation

Filtered (0,4 µm) and lyophilized in 0.1 mg/mL in deionized water.

Reconstitution

Add deionized water to prepare a working stock solution of approximately 0.5 mg/mL and let the lyophilized pellet dissolve completely. Product is not sterile! Please filter the product by an appropriate sterile filter before using it in the cell culture.

Shipping

At ambient temperature. Upon receipt, store the product at the temperature recommended below.

Storage, Stability/Shelf Life

Store lyophilized protein at -80°C. Lyophilized protein remains stable until the expiry date when stored at -80°C. Aliquot reconstituted protein to avoid repeated freezing/thawing cycles and store at -80°C for long term storage. Reconstituted protein can be stored at 4°C for a limited period of time; it does not show any change after one week at 4°C.

Quality Control Test

BCA to determine quantity of the protein.

SDS PAGE to determine purity of the protein.

LAL to determine quantity of endotoxin.

Applications

Cell culture and/or animal studies, ELISA, Immunological methods, Western blotting

Note

This product is intended for research use only.

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