

## PRODUCT DATASHEET

### Lipocalin-2/NGAL Human E. coli

**Cat. No.:** RD172102050

**Type:** Recombinant protein

**Size:** 0.05 mg

**Source:** E. coli

**Species:** Human

#### Description

Total 206 AA. MW: 23.9 kDa (calculated). N-terminal His-tag and TEV cleavage site, 28 extra AA (highlighted). UniProtKB acc.no. P80188 (Gln21-Gly198). Protein identity confirmed by LC-MS/MS.

#### Other names

24p3, MSFI, LCN2

#### Introduction to the molecule

Lipocalin-2 (LCN2) is a 25 kDa secretory glycoprotein, also called NGAL (neutrophil gelatinase-associated lipocalin); NL (neutrophil lipocalin); p25; oncogen 24p3 and 25 kDa alpha-2-microglobulin-related subunit of MMP-9 (LCN2 forms a covalently linked, disulfide-bridged heterodimer with the 92 kDa type V collagenase (MMP-9)). LCN2 is predominantly expressed in adipose tissue and liver. It belongs to the lipocalin superfamily that consists of over 20 small secretory proteins. Lipocalin folds consist of 8 antiparallel  $\beta$ -sheets that surround a hydrophobic pocket. A common feature of this protein family, following from its structure, is its capacity to bind and transport small lipophilic substances such as free fatty acids, retinoids, arachidonic acid and various steroids. Although Lipocalin-2 was identified more than a decade ago, the physiologic function of this protein remains poorly understood. LCN2 appears to be upregulated in cells under the "stress" (e.g. from infection, inflammation, in tissues undergoing involution to ischemia or neoplastic transformation). Plasma levels of LCN2 rise in inflammatory or infective condition. It mediates an immune response to bacterial infection by sequestering iron. In this case, LCN2 may represent a promising candidate as a therapeutic agent against bacterial infection. Several recent reports suggest that LCN2 might represent a sensitive biomarker for early renal injury. In cardiopulmonary bypass-induced acute renal injury and cisplatin-induced nephrotoxic injury, increased de novo synthesis of LCN2 in proximal tubule cells leads to sharply increased concentration of this protein in both urine and serum. LCN2 might also be critical for normal kidney formation in the earliest stages of mammalian development. LCN2 may play an important role in breast cancer, in complex with MMP-9, by protecting MMP-9 from degradation thereby enhancing its enzymatic activity and facilitating angiogenesis and tumor growth. LCN2 is also highly expressed after malignant transformation of the lung, colon and pancreatic epithelia. Circulating levels of LCN2 play a causative role in pathogenesis of obesity-induced metabolic disorders such as insulin resistance, Type 2 Diabetes Mellitus and cardiovascular disorders. In addition, serum LCN2 concentrations were positively associated with adipocyte-fatty acid binding protein (A-FABP), a novel serum marker for adiposity and metabolic syndrome.

Areas of investigation: Bacterial infection Renal injury Angiogenesis Oncology Diabetes mellitus Metabolic syndrome  
Features

#### Research topic

Animal studies, Energy metabolism and body weight regulation, Renal disease

#### Amino Acid sequence

MSYYHHHHHH DYDIPTTENL YFQGAMGS QDSTSDLIPA PPLSKVPLQQ NFQDNQFQGK WYVVGLAGNA ILREDKDPQK MYATIYELKE  
DKSYNVTSLV FRKKKCDYWI RTFVPGCQPG EFTLGNIKSY PGLTSLVLRV VSTNYNQHAM VFFKKVSQNR EYFKITLYGR TKELTSELKE  
NFIRFSKSLG LPENHIVFPV PIDQCIDG

#### Purity

Purity as determined by densitometric image analysis: >95%

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**Endotoxin**

< 0.1 EU/ug

**Formulation:**

Filtered (0.4 µm) and lyophilized in 0.5 mg/mL in 0.05 M phosphate buffer, 0.075 M NaCl, pH 7.4

**Reconstitution:**

Add 100ul of deionized water to prepare a working stock solution of 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 the 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 week.

**Quality control**

BCA to determine quantity of the protein.

SDS PAGE to determine purity of the protein.

LAL to determine quantity of endotoxin.

**Applications**

ELISA, Western blotting

**Note**

This product is intended for research use only.

