Data Sheet (Cat.No.TMPY-02316)

TargetMol

Lipocalin-2/LCN2 Protein, Rat, Recombinant (His)

General Information

Synonyms:	lipocalin 2
Protein Construction:	A DNA sequence encoding the rat LCN2 (P30152) (Met 1-Asn 198) was fused with a polyhistidine tag at the C-terminus. Predicted N terminal: Gln 21
Species:	Rat
Expression Host:	Baculovirus Insect Cells
Accession:	P30152
Molecular Weight:	21.9 kDa (predicted); 25 kDa (reducing conditions)

QC Testing

Biological Activity:	Measured by its ability to bind Iron(III) dihydroxybenzoic acid [Fe(DHBA)3]. The binding of Fe (DHBA)3 results in the quenching of Trp fluorescence in Lipocalin2. It binds >1.0 μM of Fe (DHBA)3.
Purity:	> 90 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing 20 mM Tris, 500 mM NaCl, 10% glycerol, pH 7.0.Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Lipocalin-2 (LCN2), also known as neutrophil gelatinase-associated lipocalin (NGAL), is a 25 kDa protein belonging to the lipocalin superfamily. It was initially found in activated neutrophils, however, many other cells, like kidney tubular cells, may produce NGAL in response to various insults. This protein is released from injured tubular cells after various damaging stimuli, is already known by nephrologists as one of the most promising biomarkers of

incoming Acute Kidney Injury (AKI). Recent evidence also suggests its role as a biomarker in a variety of other renal and non-renal conditions. Moreover, recent studies seem to suggest a potential involvement of this factor also in the genesis and progression of chronic kidney diseases. NGAL is the first known mammalian protein that specifically binds organic molecules called siderophores, which are high-affinity iron chelators. NGAL, first known as an antibacterial factor of natural immunity, and an acute-phase protein, is currently one of the most interesting and enigmatic proteins involved in the process of tumor development. acting as an intracellular iron carrier and protecting MMP9 from proteolytic degradation, NGAL has a clear pro-tumoral effect, as has already been observed in different tumors (e.g. breast, stomach, esophagus, brain) in humans. In thyroid carcinomas, NGAL is strongly induced by NF-kB, an important factor involved both in tumor growth and in the link between chronic inflammation and neoplastic development. Thus, Lipocalin-2 (LCN2/NGAL) has been implicated in a variety of processes including cell differentiation, proliferation, survival, and morphogenesis.

Reference

Schmidt-Ott KM,et al.(2006) Neutrophil gelatinase-associated lipocalin-mediated iron traffic in kidney epithelia. Curr Opin Nephrol Hypertens. 15(4): 442-9.

Bolignano D,et al.(2010) Neutrophil gelatinase-associated lipocalin (NGAL) in human neoplasias: a new protein enters the scene. Cancer Lett. 288(1): 10-6.

Soni SS,et al.(2010) NGAL: a biomarker of acute kidney injury and other systemic conditions. Int Urol Nephrol. 42 (1): 141-50.

Bolignano D,et al.(2010) From kidney to cardiovascular diseases: NGAL as a biomarker beyond the confines of nephrology. Eur J Clin Invest. 40(3): 273-6.