

Alpha 1-Microglobulin Protein, Human (P.pastoris, His)

Cat. No.:	HY-P75476
Synonyms:	Alpha-1-microglobulin; Protein HC; ITI-LC; Bikunin; AMBP
Species:	Human
Source:	P. pastoris
Accession:	P02760 (A206-L348)
Gene ID:	259
Molecular Weight:	Approximately 17.4 kDa

PROPERTIES

Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 µm filtered solution of PBS, pH 7.4. Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween 80 are added as protectants before lyophilization.
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH ₂ O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background

The Alpha 1-Microglobulin protein serves as a multifaceted antioxidant and tissue repair agent, showcasing reductase, heme-binding, and radical-scavenging activities. Operating both intravascularly and extravascularly, it actively removes and shields against harmful oxidants, facilitating repair of macromolecules in various cellular compartments. Intravascularly, the protein plays a regulatory role in red cell homeostasis by preventing heme- and reactive oxygen species-induced cell damage, safeguarding fetal and adult red blood cells from hemolysis. It also reduces extracellular methemoglobin, converting it back to the oxygen-carrying form deoxyhemoglobin. In instances of acute inflammation, it inhibits oxidation of low-density lipoprotein particles, thereby limiting vascular damage. Extravascularly, the protein protects against oxidation products on extracellular matrix structures and cell membranes, catalyzing the reduction of carbonyl groups on oxidized collagen fibers. Notably, it counteracts oxidative damage at the blood-placenta interface, preventing the leakage of free fetal hemoglobin into the maternal circulation. Intracellularly, the protein maintains mitochondrial redox homeostasis, preserving mitochondrial ATP synthesis and protecting renal tubule epithelial cells from heme-induced oxidative damage. Additionally, it exhibits chaperone activity in facilitating the correct folding of bikunin in the endoplasmic reticulum, and it acts as a Kunitz-type serine protease inhibitor and structural component of the extracellular matrix, contributing to extracellular space remodeling and cell adhesion. It further participates in the I-alpha-I complex, facilitating the transfer of heavy chains to hyaluronan in the presence of TNFAIP6, a process critical for extracellular matrix proteoglycan structure.

remodeling. The protein's diverse functions extend to inhibiting proteases involved in airway inflammation, cytotoxic responses, and matrix metalloproteinase activation, as well as playing a role in cumulus oophorus expansion during ovulation and inhibiting calcium oxalate crystallization.

Caution: Product has not been fully validated for medical applications. For research use only.

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