

## S100A9 Protein, Human (His)

<b>Cat. No.:</b>	HY-P70532A
<b>Synonyms:</b>	Protein S100-A9; Calgranulin-B; Calprotectin L1H subunit; Leukocyte L1 complex heavy chain; MRP-14; CAGB; CFAG
<b>Species:</b>	Human
<b>Source:</b>	E. coli
<b>Accession:</b>	P06702 (T2-P114)
<b>Gene ID:</b>	6280
<b>Molecular Weight:</b>	Approximately 15 kDa

### PROPERTIES

<b>AA Sequence</b>	<p>T C K M S Q L E R N    I E T I I N T F H Q    Y S V K L G H P D T    L N Q G E F K E L V</p> <p>R K D L Q N F L K K    E N K N E K V I E H    I M E D L D T N A D    K Q L S F E E F I M</p> <p>L M A R L T W A S H    E K M H E G D E G P    G H H H K P G L G E    G T P</p>
<b>Biological Activity</b>	Measured by its ability to induce CXCL1/KC secretion by C3H10T1/2 mouse embryonic fibroblast cells. The ED <sub>50</sub> for this effect is 4.506 µg/mL, corresponding to a specific activity is 221.93 units/mg.
<b>Appearance</b>	Lyophilized powder.
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution of 50 mM Tris-HCL, 300 mM NaCl, pH 7.4, 5% trehalose, 5% mannitol and 0.01% Tween 80.
<b>Endotoxin Level</b>	<1 EU/µg, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O.
<b>Storage &amp; Stability</b>	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.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

<b>Background</b>	S100A9, a calcium- and zinc-binding protein, plays a pivotal role in regulating inflammatory processes and immune responses. Its diverse functions include inducing neutrophil chemotaxis, adhesion, and enhancing the bactericidal activity of neutrophils through SYK, PI3K/AKT, and ERK1/2 activation, as well as promoting phagocytosis. Often found in the form of calprotectin (S100A8/A9), it serves intra- and extracellular roles, including facilitating leukocyte arachidonic acid trafficking and NADPH-oxidase activation intracellularly. Extracellularly, it exhibits pro-inflammatory, antimicrobial, oxidant-scavenging, and apoptosis-inducing activities, recruiting leukocytes, promoting cytokine and chemokine production, and
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regulating leukocyte adhesion and migration. Functioning as an alarmin or DAMP molecule, S100A9 stimulates innate immune cells via Toll-like receptor 4 (TLR4) and receptor for advanced glycation endproducts (AGER), activating MAP-kinase and NF-kappa-B signaling pathways. With antimicrobial activity against bacteria and fungi, it likely acts by chelating Zn(2+), essential for microbial growth. S100A9 can induce cell death through autophagy and apoptosis via mitochondrial-lysosomal cross-talk involving BNIP3 and regulates neutrophil number and apoptosis, acting as an anti-apoptotic factor. Its role as an oxidant scavenger protects against tissue damage by scavenging oxidants. Notably, S100A9 can act as a potent amplifier of inflammation in autoimmunity, cancer development, and tumor spread. It also exhibits transnitrosylase activity, contributing to S-nitrosylation of various targets, and forms complexes with other proteins, such as the iNOS-S100A8/A9 transnitrosylase complex, indicating its multifaceted involvement in immune regulation and inflammatory responses.

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

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