

Animal-Free HMGB1/HMG-1 Protein, Human (His)

Cat. No.:	HY-P72797AF
Synonyms:	High Mobility Group Protein B1; High Mobility Group Protein 1; HMG-1; HMGB1; HMG1
Species:	Human
Source:	E. coli
Accession:	P09429 (M1-E215)
Gene ID:	3146
Molecular Weight:	Approximately 25.70 kDa

PROPERTIES

AA Sequence	<p> M G K G D P K K P R G K M S S Y A F F V Q T C R E E H K K K H P D A S V N F S E F S K K C S E R W K T M S A K E K G K F E D M A K A D K A R Y E R E M K T Y I P P K G E T K K K F K D P N A P K R P P S A F F L F C S E Y R P K I K G E H P G L S I G D V A K K L G E M W N N T A A D D K Q P Y E K K A A K L K E K Y E K D I A A Y R A K G K P D A A K K G V V K A E K S K K K K E E E E D E E D E E D E E E E E D E E D E D E E E D D D D E </p>
Biological Activity	Measure by its ability to induce TNF alpha in RAW264.7 cells. The ED ₅₀ for this effect is <10 µg/mL.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a solution containing 1X PBS, pH 8.0.
Endotoxin Level	<0.1 EU per 1 µg of the protein by the 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	<p>HMGB1/HMG-1, a multifunctional redox-sensitive protein, exhibits diverse roles across different cellular compartments. Within the nucleus, it stands as a major chromatin-associated non-histone protein, functioning as a DNA chaperone involved in crucial processes such as replication, transcription, chromatin remodeling, V(D)J recombination, DNA repair, and genome stability. Proposed as a universal biosensor for nucleic acids, HMGB1/HMG-1 plays a pivotal role in promoting the host inflammatory response to both sterile and infectious signals, coordinating innate and adaptive immune responses.</p>
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In the cytoplasm, it serves as a sensor and/or chaperone for immunogenic nucleic acids, activating TLR9-mediated immune responses and mediating autophagy. Released to the extracellular environment, HMGB1/HMG-1 engages with various molecules such as DNA, nucleosomes, IL-1 beta, CXCL12, AGER isoform 2/sRAGE, lipopolysaccharide (LPS), and lipoteichoic acid (LTA), activating cells through multiple surface receptors. The extracellular HMGB1 exists in different redox states, with fully reduced HMGB1 acting as a chemokine, disulfide HMGB1 as a cytokine, and sulfonyl HMGB1 promoting immunological tolerance. Beyond its immunomodulatory roles, HMGB1/HMG-1 is implicated in proangiogenic activity, platelet activation, neuronal outgrowth signaling via RAGE, and potential involvement in the accumulation of expanded polyglutamine proteins. Its nuclear functions, attributed to fully reduced HMGB1, include association with chromatin, DNA bending, and enhancement of DNA flexibility through looping, facilitating various gene promoter activities. Additionally, HMGB1/HMG-1 may play roles in nucleotide excision repair, mismatch repair, base excision repair, double-strand break repair, V(D)J recombination, displacement of histone H1, restructuring nucleosomes, enhancing transcription factor binding, and modulating the telomerase complex. The intricate functions of HMGB1/HMG-1 highlight its significance in diverse cellular processes.

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

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