Recombinant Human HMGB1/HMG-1

Catalog Number: 1690-HM

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived Met1-Glu215 Accession # P09429.3
Predicted Molecular Mass	24.9 kDa

SPECIFICATIONS

SDS-PAGE	30-36 kDa, reducing conditions
Activity	Measured in a competitive binding assay. When recombinant human RAGE Fc Chimera is immobilized at 2 µg/mL (100 µL/well), Recombinant Human HMGB1/HMG−1 inhibits 50% binding of biotinylated recombinant human HMGB1 (0.25 µg/mL) at the concentration range of 0.35-1.4 µg/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Supplied as a 0.2 µm filtered solution in PBS, EDTA and DTT. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Shipping	The product is shipped with dry ice or equivalent. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 6 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after opening. ● 3 months, -20 to -70 °C under sterile conditions after opening.

BACKGROUND

High-mobility Group Box 1 protein (HMGB1), also known as HMG1 or Amphoterin, is a member of the high mobility group box family of non-histone chromosomal proteins (1-3). Human HMGB1 is expressed as a 25 kDa single chain protein containing two globular positively charged DNA-binding domains (HMG boxes A and B) and a negatively charged C-terminal region that contains only Asp and Glu residues (4, 5). Posttranslational modification of HMBG1, including acetylation, phosphorylation, and methylation, affects HMBG1 localization, receptor interactions, and bioactivity (3). An intramolecular disulfide bond between Cys23 and Cys45 as well as the presence of the unpaired Cys106 thiol are critical for HMGB1-induced pro-inflammatory TNF-alpha secretion (2, 6). Alternatively, fully reduced HMGB1 acts as a potent chemoattractant for neutrophils and monocytes (7). HMGB1 can be localized to the nucleus or cytoplasm and can also be secreted despite its lack of a signal peptide (2). HMGB1 binds DNA in a non-sequence specific manner and may act as a structural cofactor during gene transcription (8). Acetylation of HMGB1 results in its cytoplasmic localization and eventual secretion (9). HMGB1 can be secreted by multiple cell types, and it is also released upon cell necrosis, apoptosis, and pyroptosis (2, 3). HMBG1 is widely recognized as a multifunctional alarmin that stimulates inflammation upon sterile or infectious insult. Receptors for HMGB1 include TLR2, TLR4, TLR9, Syndecan-3, Siglec-10, Integrin alpha M beta 2, CXCR4, TIM-3, and RAGE (1, 2). It is implicated in the pathogenesis of a broad range of diseases including atherosclerosis, sepsis, cancer, neurodegenerative diseases, and autoimmunity (3, 10-13).

References:

1. Yanai, H. *et al.* (2012) Trends Immunol. **33**:633.
2. Yang, H. *et al.* (2013) J. Leukoc. Biol. **93**:865.
3. Harris, H.E. *et al.* (2012) Nat. Rev. Rheumatol. **8**:195.
4. Degryse, B. and M. de Virgilio (2003) FEBS Lett. **553**:11.
5. Wen, L. *et al.* (1989) Nucleic Acids Res. **17**:1197.
6. Yang, H. *et al.* (2012) Mol. Med. **18**:250.
7. Venereau, E. *et al.* (2012) J. Exp. Med. **209**:1519.
8. Bianchi, M.E. and A. Agresti (2005) Curr. Opin. Genet. Dev. **15**:496.
9. Bonaldi, T. *et al.* (2003) EMBO J. **22**:5551.
10. Diener, K.R. *et al.* (2013) Immunol. Cell Biol. **91**:443.
11. Fang, P. *et al.* (2012) Mol. Neurobiol. **45**:499.
12. de Souza, A.W. *et al.* (2012) Autoimmun. Rev. **11**:909.
13. Bae, J.S. (2012) Arch. Pharm. Res. **35**:1511.

www.RnDSystems.com For research use only. Not for use in humans.
USA & CANADA Tel: (800) 343-7475 **EUROPE** Tel: +44 (0)1235 529449 **CHINA** Tel: +86 (21) 52380373