

Product Information

Ubiquitin

human, recombinant

expressed in *E. coli*

N-Terminal Histidine-tagged

Product Number **U5507**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

Synonym: HisUb

Product Description

The ubiquitin-proteasome pathway is a controlled, ATP dependent system responsible for selective degradation of short-lived cellular proteins and is critical for the regulation of many cellular processes. These processes include antigen presentation, modulation of cell surface receptors and ion channels, and overall regulation of the cell cycle. The ubiquitin-proteasome pathway is driven by an enzymatic cascade through which multiple ubiquitin molecules are covalently attached to the protein substrate to form a polyubiquitin-protein conjugate, which is then degraded by the 26S proteasome complex.^{1,2}

Research has indicated that exogenous ubiquitin has inhibited the growth of various hematopoietic cell lines, most notably the myeloid cell line HL-60 and the T-cell line KT-3. This same research suggests that ubiquitin evoked severe apoptosis in the KT-3 and HL-60 lines through the activation of caspase-3.³ Histidine-tagged ubiquitin has been shown to be a valid substitute for wild-type ubiquitin.⁴

Ubiquitin, N-Terminal Histidine-tagged (molecular weight of approximately 10 kDa) can replace native ubiquitin in formation of polyubiquitin-protein conjugates. The histidine tag enables separation and enrichment of these protein conjugates on a Ni^{2+} column and detection of conjugates in Western blots by anti-histidine tag antibodies.

This product is supplied as a lyophilized, essentially salt-free powder with a minimum purity of 95% (SDS-PAGE).

Precautions and Disclaimer

This product is for laboratory use only. Please consult the Material Data Safety Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

This product is soluble in 20 mM Tris-HCl, pH 7.5, (1 mg/ml), yielding a clear, colorless solution.

Storage/Stability

It is recommended to store the product at below $-20\text{ }^{\circ}\text{C}$. The lyophilized product is stable for a minimum of six months when stored desiccated at less than $-20\text{ }^{\circ}\text{C}$.

References

1. Hershko, A., and Ciechanover, A., The ubiquitin system for protein degradation. *Annu. Rev. Biochem.*, **61**, 761-807 (1992).
2. Schwartz, A.L., and Ciechanover, A., The ubiquitin-proteasome pathway and pathogenesis of human diseases. *Annu. Rev. Med.*, **50**, 57-74 (1999).
3. Daino, H., et al., Induction of apoptosis by extracellular ubiquitin in human hematopoietic cells: possible involvement of STAT3 degradation by proteasome pathway in interleukin 6-dependent hematopoietic cells. *Blood*, **95(8)**, 2577-2585 (2000).
4. Ling, R., et al., Histidine-tagged ubiquitin substitutes for wild-type ubiquitin in *Saccharomyces cerevisiae* and facilitates isolation and identification of in vivo substrates of the ubiquitin pathway. *Anal. Biochem.*, **282(1)**, 54-64 (2000).

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