

Product Information

20S Proteasome

from rabbit

Product Number **P 3988**

Storage Temperature -70°C

Product Description

This product is the catalytic core of the 26S proteasome, which degrades polyubiquitinated proteins. This 700 kDa proteasome will hydrolyze various peptide substrates and proteins with broad specificity in a non-ATP dependent process.¹ It is activated by detergent or PA28.

Degradation of short-lived, key regulatory proteins by the ubiquitin-proteasome pathway plays key roles in a number of cellular processes. A number of proteins are degraded by this system including: cyclins, cyclin-dependent kinases^{2,3} and their inhibitors, tumor suppressors, oncoproteins, and transcriptional activators and their inhibitors. Two discrete steps are involved in the ubiquitin-mediated degradation of proteins: signaling by covalent conjugation of multiple ubiquitin moieties and degradation of the tagged substrate. Conjugation occurs by a three-step mechanism involving three different enzymes that act sequentially: E1, E2, and E3. Ubiquitin-activating enzyme (E1) catalyzes the activation of ubiquitin then E2 (ubiquitin-conjugating enzyme) transfers activated ubiquitin to E3, which is bound to the substrate. E3 catalyzes the polyubiquitination of the targeted protein. The polyubiquitin-tagged protein is then degraded by the 26S proteasome in an ATP-dependent process, and free ubiquitin is released.⁴⁻⁶

20S Proteasome is supplied as a solution in 50 mM HEPES, 1 mM DTT, and 150 mM sodium chloride, pH 7.6.

Purity: minimum 95% (SDS-PAGE)

20S Proteasome activity is measured using the fluorogenic substrate Z-LLVY-AMC with detergent activation.

Precautions and Disclaimer

For laboratory use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

The product ships on dry ice and storage at -70°C is recommended. Avoid multiple freeze thaw cycles. Do not store in a frost-free freezer.

References

1. Hough, R., et al., Purification of two high molecular weight proteases from rabbit reticulocyte lysate. *J. Biol. Chem.*, **262**, 8303-8313 (1987).
2. DeSalle, L.M., and Pagano, M., Regulation of the G1 to S transition by the ubiquitin pathway. *FEBS Lett.*, **490**, 179-189 (2001).
3. Yew, P.R., Ubiquitin-mediated proteolysis of vertebrate G1 and S-phase regulators. *J. Cell Physiol.*, **187**, 1-10 (2001).
4. Tanaka, K., et al., The ligation systems for ubiquitin and ubiquitin-like proteins. *Mol. Cells*, **8**, 503-512 (1998).
5. Myung, J., et al., The ubiquitin-proteasome pathway and proteasome inhibitors. *Med. Res. Rev.*, **21**, 245-273 (2001).
6. Benaroudj, N., et al., The unfolding of substrates and ubiquitin-independent protein degradation by proteasomes. *Biochimie*, **83**, 311-318 (2001).

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