26S Proteasome (Human)

Cat. # PS026

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Background

The 26S proteasome is a large multi-protein complex, which plays a fundamental role in cellular homeostasis by controlling degradation of key proteins that are involved in apoptosis, cell cycle and signal transduction. The 26S proteasome is responsible for cell quality control by eliminating misfolded proteins from the cytosol and endoplasmic reticulum. With its diverse functions, the proteasome is an important target for drug development, particularly in cancer and neurodegeneration. The 26S proteasome is composed of the 20S catalytic core (core particle, CP), capped at one or both ends by 19S lids (regulatory particles, RP), which are responsible for deubiquitylation, unfolding and direction of proteins to the catalytic sites within the CP. After the addition of polyubiquitin chains to the protein, the substrate is directed into the catalytic core and most of the ubiquitin molecules are recycled.

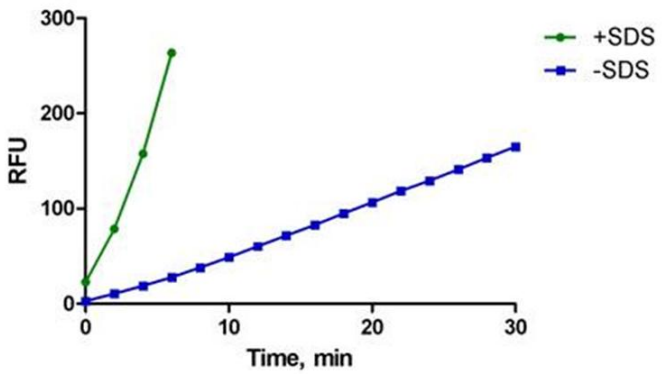
Application(s)

This purified 26S proteasome preparation can be used in vitro for the degradation of peptide substrates and polyubiquitinated proteins and screening for novel inhibitors.

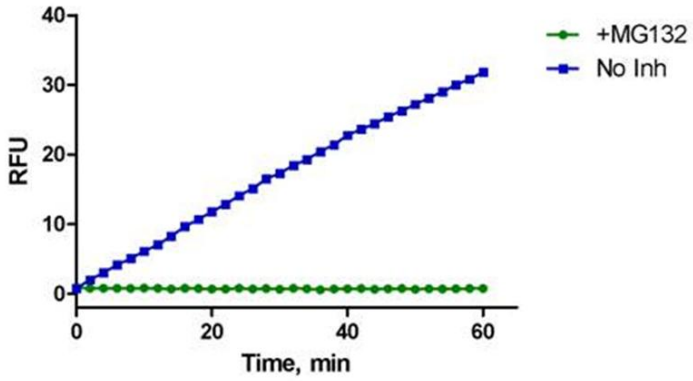
Product Specifications

Quantity	50 µg,
Physical State	Liquid
Buffer	20 mM Tris-HCl pH 7.2, 10% Glycerol, 150 mM KCl, 1 mM β–mercaptoethanol
Concentration	1 mg/ml
Source	Human Red Blood Cells
Activity	See below
Stability & Storage	1 year at -80° C. Avoid repeated freeze/thaw cycles

Product QC



The chymotrypsin-like activity of the 26S proteasome (45µg/ml) was measured using 100µM Suc-LLVY-AMC in 20 mM HEPEs, pH 7.5, 0.5 mM EDTA, 0.05% Triton X, plus or minus 0.035% SDS



The chymotrypsin-like activity of the 26S proteasome (18 µg/ml) was measured using 100µM Suc-LLVY-AMC in 20 mM HEPEs, pH 7.5, 0.5 mM EDTA, 0.05% Triton X, plus or minus 0.5 mM MG132 (Cat. # SI9710)

References

1. Ganoth D., et al. (1988) A multicomponent system that degrades proteins conjugated to ubiquitin. Resolution of factors and evidence for ATP-dependent complex formation.

2. J.Biol.Chem. 263:12412-12419
3. 2. Driscoll J. and Goldberg A.L. The proteasome (multicatalytic protease) is a component of the 1500-kDa proteolytic complex which degrades ubiquitin-conjugated proteins. (1990)
4. J.Biol.Chem. 265:4789-4792
5. 3. DeMartino GN and Slaughter CA (1999) The proteasome, a novel protease regulated by multiple mechanisms. J.Biol.Chem. 274:22123-22126
6. Voges D., et al. (1999) The 26S proteasome: a molecular machine designed for controlled proteolysis. Ann.Rev.Biochem. 68:1015-1068
7. 5. Glickman MH and Ciechanover A.. (2002). The ubiquitin-proteasome proteolytic pathway: destruction for the sake of construction. Physiol Rev. 2002 Apr;82(2):373-428
8. 6. Kisselev AF and Goldberg AL (2005) Monitoring activity and inhibition of 26S proteasomes with fluorogenic peptide substrates. Meth.Enz. 398:364-378
9. 7. Wang X, et al. (2007) Mass spectrometric characterization of the affinity-purified human 26S proteasome complex. Biochem. 46:3553-3563
10. 8. Navon A and Ciechanover A. (2009) The 26 S proteasome: from basic mechanisms to drug targeting. JBC 284(49):33713–33718
11. 9. Bedford L, et al. (2010) Assembly, structure, and function of the 26S proteasome. Trends Cell Biol. 20(7): 391–401.
12. 10. Saeki Y and Tanaka K. (2012) Ubiquitin Family Modifiers and the Proteasome: Reviews and Protocols. Methods in Molecular Biology, 832: 315-337