3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone (800) 325-5832 (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

S-100 PROTEASOME FRACTION
From HeLa Cells

Product Number **P4113**

Product Description

S-100 Proteasome Fraction is the full HeLa cell compliment of E1, E2s, the 20S and 26S proteasomes including isopeptidases, PA28 (proteasome activator also known as 11S REG),[1] and E3 enzymes.

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 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.[4-7]

Reagent

S-100 Proteasome Fraction is supplied as a solution in 50 mM HEPES, pH 7.6, 20 mM NaCl, 0.5 mM DTT..

Precautions and Disclaimer

For laboratory use only. Not for drug, household or other uses. Please consult the Material Safety Data Sheet for handling recommendations before working with this material.

Storage/Stability

S-100 Proteasome Fraction solution should be stored in aliquots at –70 °C. Avoid multiple freeze thaw cycles. Do not store in a frost-free freezer.

Product Profile

S-100 Proteasome Fraction is ideal for demonstrating ubiquitin proteasome degradation/conjugation of radiolabeled or immunodetectable substrates. Typical assay concentration for the extract is 0.5 to 4 mg/ml. Isopeptidase inhibitor and a proteasome inhibitor are highly recommended for the accumulation of ubiquitin-protein conjugates.

References

1. Li, J. and Rechsteiner, M., Molecular dissection of the 11S REG (PA28) proteasome activators. Biochimie, **83**, 373-383 (2001).
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. Hatakeyama, S., et al., U box proteins as a new family of ubiquitin-protein ligases. J. Biol. Chem., **276**, 33111-33120 (2001).
5. Tanaka, K., et al., The ligation systems for ubiquitin and ubiquitin-like proteins. Mol. Cells, **8**, 503-512 (1998).
6. Myung, J., et al., The ubiquitin-proteasome pathway and proteasome inhibitors. Med. Res. Rev., **21**, 245-273 (2001).
7. Benaroudj, N., et al., The unfolding of substrates and ubiquitin-independent protein degradation by proteasomes. Biochimie, **83**, 311-318 (2001).

Manufactured for Sigma by Boston Biochem., Inc.

DMG 01/02