Ubiquitin (pSer57) Modifying Protein

Alternate Names: Ribosomal Protein S27a, CEP80, UBA80, UBCEP1, UBCEP80, HUBCEP80, RPS27A

Cat. No. 60-0208-050
Lot. No. 30385

Quantity: 50 μg
Storage: -70˚C

FOR RESEARCH USE ONLY

NOT FOR USE IN HUMANS

CERTIFICATE OF ANALYSIS Page 1 of 2

Background

Ubiquitin (Ub) is a highly conserved 76 amino-acid protein found throughout eukaryotic cells. A vast number of cellular processes, including targeted protein degradation, cell cycle progression, DNA repair, protein trafficking, inflammatory response, virus budding, and receptor endocytosis, are regulated by Ub-mediated signaling; where the target protein is tagged by single or multi-monomeric Ub (monomeric Ub attached to multiple sites on the substrate) or a polymeric chain of Ubs (Fushman and Walker, 2010). More recently the demonstration that ubiquitin itself can be modified through phosphorylation by the kinase PTEN Induced putative Kinase1 (PINK1) provides a major breakthrough linking the two most important signalling pathways in cells; phosphorylation and ubiquitylation (Kane et al., 2014; Kazlauskaite et al., 2014; Koyano et al., 2014). Several studies have revealed that PINK1 directly phosphorylates ubiquitin on Ser65 a residue that is also shared by the Parkin UbI domain (Kane et al., 2014; Kazlauskaite et al., 2014; Koyano et al., 2014). Parkin is activated by Ser65 phosphorylated ubiquitin in a manner which is independent of ubiquitin's ability to be conjugated. The mechanism of Parkin priming and activation is thought to occur through a conformational change induced by PINK1 phosphorylation on Ser65 followed by the binding of PINK1 Ser65 phosphorylated ubiquitin on the RING1 domain which optimises the ubiquitylation.

Physical Characteristics

Species: human
Source: synthetic
Quantity: 50 μg
Concentration: 1 mg/ml
Formulation: 50 mM HEPES pH 7.5, 150 mM sodium chloride, 2 mM dithiothreitol, 10% glycerol, 2% DMSO
Molecular Weight: 8.645 kDa
Purity: >98% by InstantBlue™ SDS-PAGE
Stability/Storage: 12 months at -70˚C; aliquot as required

Protein Sequence:

MQIFVKTLGKTLITLEVEPSDTEIVKAIIKQDE
GIIPPPDLQRLIFAGKQLEDGRTL (pS) DY
NIQKESTLHLVLRG

Ubiquitin (regular text): Start bold italics
(amino acid residues 1-76)
Phosphorylated Serine 57 (bold in brackets)
Accession number: P62990.1

Quality Assurance

Purity:
4-12% gradient SDS-PAGE
InstantBlue™ staining
Lane 1: MW markers
Lane 2: 1 μg Ubiquitin (pSer57)

Protein Identification:
Confirmed by mass spectrometry.

Alternate Names:
Ribosomal Protein S27a, CEP80, UBA80, UBCEP1, UBCEP80, HUBCEP80, RPS27A

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Background

Phosphoproteomic studies have identified the presence of several phosphorylated peptides demonstrating homology to proteins of the Ubiquitin Proteasome Pathway (UPP) these include ubiquitin (pSer57 being among those identified), ubiquitin like modifiers and proteins containing ubiquitin binding domains (Bennetzen et al., 2010; Bian et al., 2014; Mortiz et al., 2010; Sharma et al., 2014).

Ubiquitin (pSer57) (Cat# 60-0208-050) is a phosphorylated synthetically made ubiquitin which may be used alongside Biotin-Ahx-Ubiquitin (pSer57) (Cat# 60-0205-050) and the non-phosphorylated control Ubiquitin (synthetic) (Cat# 60-0200-050).

References:


Citation activity of Parkin (Kazlauskaite et al., 2014; Koyano et al., 2014). Phospho-ubiquitin may play other roles in regulating Parkin but more generally the identification of phospho-ubiquitin as a second messenger in signalling pathways could reveal the existence of further ubiquitin phosphatases and lead to the discovery of additional kinase and ubiquitin related substrates (Sauve and Gehring, 2014).