Biotinylated K63-Linked Tetra-Ubiquitin (Phosphorylated)

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Background

Polyubiquitylation is a post-translational modification that regulates protein stability and protein–protein interactions. The type of polyubiquitin linkage determines the fate of the modified protein(s). Polyubiquitylation through K63 linkages has recently become the focus of intense study. Notably, the topology of this linkage and its role in cellular processes differ significantly from those of K48-linked chains. K63-linked polyubiquitin appears to function in endocytic trafficking, DNA repair, neurodegeneration, and other pathways.

These tetra-ubiquitin chains are generated by enzymatically linking wild-type ubiquitin through lysine 63. The most distal ubiquitin contains a lysine-to-arginine substitution at position 63, limiting further chain extension. The chains are then enzymatically phosphorylated at the Ser65 residue. Once phosphorylated, these tetra-ubiquitin chains are biotinylated on a mutated cysteine introduced into one of the ubiquitin monomers, allowing the attachment of a single biotin molecule.

Application(s)

- Labeling proteins with biotinylated chains for selective separation using methods such as Western blotting, pull-downs (see website), ELISAs, etc.
- Visualizing biotinylated proteins using streptavidin or avidin detection systems
- Investigating phosphoubiquitin chain specificity and selectivity
- Studying the role of phosphoubiquitin chains in protein degradation pathways (e.g., proteasomal and autophagic degradation)
- Analyzing phosphoubiquitin-mediated signaling pathways and cellular responses
- Elucidating the structure and dynamics of phosphoubiquitin chains through structural studies
- Identifying modulators of phosphoubiquitin chain assembly and disassembly using screening assays

Product Specifications

Tag	Biotin
Purity	≥ 95% by HPLC-MS
Molecular Weight	34,842-35,082 Da (depending on degree of phosphorylation)
Quantity	25μg
Species	Human
Expression System	*E. coli*
Physical State	Liquid
Buffer	50 mM Tris-HCl, pH 7.5, 150 mM NaCl
Solubility	> 1mg/ml
Stability & Storage	-80°C. Avoid repeated freeze/thaw cycles

References

1. Madiraju, C.; Novack, J.P.; Red, J.C.; Matsuzawa, S-I. K63 Ubiquitination in Immune Signaling. *Trends Immunol.* **2022**, *43*, 148-162.
2. Cao, L.; Liu, X.; Zheng, B.; Xing, C.; Liu, J. Role of K63-linked Ubiquitination in Cancer. *Cell Death Discov.* **2022**, *8*, 410.
3. Swatek, K.N. & Komander, D. Ubiquitin Modifications. *Cell Res.* **2016**, *26*, 399-422.
4. Yau, R. & Rape, M. The increasing complexity of the ubiquitin code. *Nature Cell. Bio*. **2016**, 18, 579-586.