

PRODUCT INFORMATION



Beclin 1 (human recombinant)

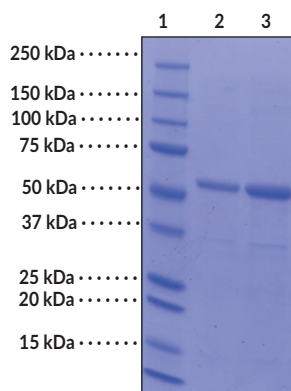
Item No. 24495

Overview and Properties

Synonyms: BECN1, Coiled-coil Myosin-like Bcl-2-interacting Protein, Protein GT197
Source: Recombinant N-terminal histidine-tagged Beclin 1 purified from *E. coli*
Amino Acids: 2-450
Uniprot No.: Q14457
Molecular Weight: 53.9 kDa
Storage: -80°C (as supplied)
Stability: ≥1 year
Purity: *batch specific* (≥80% estimated by SDS-PAGE)
Supplied in: 50 mM HEPES, pH 8.0, 150 mM sodium chloride, and 20% glycerol
Protein Concentration: *batch specific* mg/ml

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers

Lane 2: Beclin 1 (human recombinant) (2 µg)

Lane 3: Beclin 1 (human recombinant) (4 µg)

Representative gel image shown; actual purity may vary between each batch.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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Description

Beclin 1 (BECN1) is a core component of the class III phosphatidylinositol 3-kinase (PI3K) complex, which generates phosphatidylinositol 3-phosphate (PI3P) and has functions in macroautophagy and the endocytic pathway when associated with ATG14 and UVRAG, respectively.¹ BECN1 is comprised of a BH3 domain involved in Bcl-2/Bcl-xL binding, a coiled-coil domain, and an evolutionarily conserved domain (ECD) that is required for association with the PI3K complex.^{2,3} Binding of BECN1 to various Beclin 1-interacting proteins can regulate the activity of the ATG14-containing PI3K complex, which is required for nucleation of the phagophore during macroautophagy.^{1,4} Binding of the anti-apoptotic protein Bcl-2 to BECN1 prevents the association of BECN1 with the PI3K complex and inhibits autophagy, whereas AMBRA1, which also binds directly to BECN1, positively regulates the PI3K complex to facilitate autophagy.^{1,3} Transfection of autophagy-deficient MCF-7 human breast cancer cells with wild-type Beclin 1, but not a BECN1 mutant lacking the ECD, increases starvation-induced autophagy *in vitro* and inhibits tumor growth in an MCF-7 mouse xenograft model, indicating that BECN1 has ECD-dependent tumor suppressor activity.² BECN1 heterozygous mice expressing human amyloid precursor protein (*APP⁺Becn1^{+/-}* mice) have decreased autophagy in the cerebral cortex, increased extracellular amyloid- β (A β) deposits in the frontal cortex, and increased intraneuronal A β accumulation in the hippocampus and frontoparietal cortex compared to *APP⁺Becn1^{+/+}* mice.⁵ BECN1 may also have roles in ischemia/reperfusion injury, Niemann-Pick type C disease, and protection against viral infection.³

References

1. Parzych, K.R. and Klionsky, D.J. An overview of autophagy: Morphology, mechanism, and regulation. *Antioxid. Redox Signal.* **20(3)**, 460-473 (2014).
2. Furuya, N., Yu, J., Byfield, M., *et al.* The evolutionarily conserved domain of Beclin 1 is required for Vps34 binding, autophagy and tumor suppressor function. *Autophagy* **1(1)**, 46-52 (2005).
3. Cao, Y. and Klionsky, D.J. Physiological functions of Atg6/Beclin 1: A unique autophagy-related protein. *Cell Res.* **17(10)**, 839-849 (2007).
4. Burman, C. and Ktistakis, N.T. Regulation of autophagy by phosphatidylinositol 3-phosphate. *FEBS Lett.* **584(7)**, 1302-1312 (2010).
5. Pickford, D., Masliah, E., Britschgi, M., *et al.* The autophagy-related protein beclin 1 shows reduced expression in early Alzheimer disease and regulates amyloid β accumulation in mice. *J. Clin. Invest.* **118(6)**, 2190-2199 (2008).

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