

Product Information

Monoclonal Anti-phospho- β -Catenin (pSer⁴⁵)

Clone BCS-45

Purified Mouse Immunoglobulin

Product Number **C5615**

Product Description

Monoclonal Anti-phospho- β -Catenin (pSer⁴⁵) (mouse IgG1 isotype) is derived from the BCS-45 hybridoma produced by the fusion of mouse myeloma cells (NS1 cells) and splenocytes from BALB/c mice immunized with a synthetic phospho-peptide corresponding to amino acids 38-50 (pSer⁴⁵) of human β -catenin, conjugated to KLH. The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-phospho- β -Catenin (pSer⁴⁵) reacts specifically with human, monkey, mouse, and rat β -catenin phosphorylated at Ser⁴⁵ (approx. 94 kDa). The antibody may be used in various immunochemical techniques including: ELISA, immunocytochemistry, and immunoblotting. Staining of the phospho- β -Catenin (pSer⁴⁵) band in immunoblotting is specifically inhibited with the phosphorylated immunizing peptide (amino acids 38-45, pSer⁴⁵) and not with the non-phosphorylated peptide.

The catenin family of proteins (α , β , γ) are linkers between the cytosolic domain of the cadherin adhesion molecules and the cytoskeleton elements in cell-cell adherens junction.¹ In the adherens junctions, β -catenin associates the cadherin family of membrane proteins with the cytoskeleton elements, via interaction with the α -catenin. In addition to the role of β -catenin in cell-cell adhesion, the cytosolic β -catenin plays a significant role in the Wnt signaling pathway. Upon cell activation, β -catenin can enter the nucleus and activate transcription of several downstream genes.²⁻⁵ The level of the cytosolic β -catenin is regulated by its phosphorylation and this controls the activation of the Wnt signaling.³

β -Catenin activity is regulated by phosphorylation on serine/ threonine residues located at the protein amino-terminus. Four of these amino terminal residues: Ser³³, Ser³⁷, Thr⁴¹, and Ser⁴⁵ are conserved from *Drosophila* to human and are targets for phosphorylation.

The phosphorylation of β -catenin occurs in a protein complex that includes the APC complex (Adenomatous Polyposis Coli), together with axin and glycogen synthase kinase-3 (GSK-3). In this complex, GSK-3 is the kinase responsible for phosphorylating β -catenin. In addition, the phosphorylation of the Ser⁴⁵ residue is found to be performed by a complex of axin and CKI (casein kinase I).³⁻⁴ The phosphorylation of the β -catenin protein targets the protein to degradation by the β -TrCP (β -transducin repeat-containing protein). β -TrCP regulates the ubiquitination and thus the degradation of the phosphorylated β -catenin in the proteasome.²⁻⁶ Mutations in the amino terminal region of the protein and in particular in the phosphorylation sites in that region, cause reduction in the degradation of the protein and can lead to cancer. Indeed, several mutations in the amino-terminal part of β -catenin are found in a variety of human cancer. In that context, it was found that Ser⁴⁵ is the most frequent tumor mutation of β -catenin.^{4, 7}

Monoclonal antibodies to phospho- β -Catenin (pSer⁴⁵) are an important tool for studying the regulation of β -catenin by phosphorylation and thus the transcription control of many proteins.

Reagent

Monoclonal Anti-phospho- β -Catenin (pSer⁴⁵) is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, and 15 mM sodium azide.

Antibody Concentration: Approx. 1.5 mg/ml

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month.
For extended storage, freeze in working aliquots.
Repeated freezing and thawing is not recommended.

Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

By immunoblotting, a working concentration of 4-8 µg/ml is recommended using a whole extract of cultured 293T (human embryonal kidney) cells treated with the proteasome inhibitor MG-132.

Note: In order to obtain the best results in various techniques and preparations, we recommend determining the optimal working concentration by titration.

References

1. Conacci-Sorrell, M., et al., J. Clin. Invest., **109**, 987-991 (2002).
2. Sadot, E., et al., J. Cell Sci., **115**, 2771-2780 (2002).
3. Liu, C., et al., Cell, **108**, 837-847 (2002).
4. Amit, S., et al., Genes Dev., **16**, 1066-1076 (2002).
5. Orford, K., et al., J. Biol. Chem., **272**, 24735-24738 (1997).
6. Sadot, E., et al., Oncogene, **19**, 1992-2001 (2000).
7. Polkis, P., Genes Dev., **14**, 1837-1851 (2000).

KAA/RF 07/04

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