MONOCLONAL ANTI-SHP-1
CLONE 1SH01
Purified Mouse Immunoglobulin

Product Number **S 8315**

Product Information

Product Description

Monoclonal Anti-SHP-1 (SH2-containing Protein-Tyrosine Phosphatase) (mouse IgG2b isotype) is derived from the hybridoma produced by the fusion of mouse myeloma NS1 cells with splenocytes from BALB/c mice immunized with a recombinant human SHP1 protein. The antibody is purified by protein G chromatography.

Monoclonal Anti-SHP-1 recognizes human SH2-containing protein-Tyrosine Phosphatase 1 (SHP-1) (50 kDa). This antibody does not crossreact with other protein tyrosine phosphatases. It has been used in immunoblotting and immunoprecipitation applications.

Signaling through receptor tyrosine kinases (RTKs) is a major mechanism for intercellular communication during development and in the adult organism, as well as in disease associated processes. The phosphorylation status and signaling activity of RTKs is determined not only by the kinase activity of the RTK but also by the activities of protein tyrosine phosphatases (PTPs).

SHP-1 (Src homology region 2-domain phosphatase), expressed predominantly in hematopoietic cells, was first termed hematopoietic cell phosphatase (HCPH). This cytoplasmic protein contains a phosphatase-catalytic domain in the carboxyl terminal region and 2 tandemly repeated, src– homology 2 (SH2) domains in the amino terminal region. SH2 domains were first identified in the Src gene family as the regions of sequence similarity in the src family of cytoplasmic tyrosine kinases. Later they were found in a variety of proteins involved in signal transduction. The SH1 domain is a catalytic domain. SH2 and SH3 domains are protein-binding domains. SH2 usually binds phosphotyrosine-containing proteins and SH3 interacts with cytoskeletal proteins. The SH2 domains may recognize phosphorylated tyrosine residues and direct protein-protein associations.[1,2]

SHP-1 is known to play a crucial role in the regulation of hematopoiesis. It regulates the transcriptional activity stimulated by the erythropoietin (EPO)-induced JAK/STAT and MAPK pathways and is involved in the signaling events responsible for erythroid differentiation and suppression of apoptosis.

Furthermore, the association of SHP-1 with RAFTK/Pyk2/CAK activated by the β-chemokine receptor, the adaptor protein Grb2 and the Src-related kinase Syk, indicates the role of SHP-1 in modulating cell migration, proliferation, and immune functions. Loss of SHP1 gene expression plays an important role in multistep tumorigenesis, possibly as an anti-oncogene in the wide range of lymphomas/leukemias as well as NK/T lymphomas.[3-5]

Reagent

Monoclonal Anti-SHP-1 is supplied as a solution in phosphate buffered saline, pH 7.4, with 0.08% sodium azide as a preservative.

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

Store at –20 °C. Upon initial thawing freeze the solution in working aliquots for extended storage. Avoid repeated freezing and thawing to prevent denaturing the antibody. Do not store in the frost-free freezer. The antibody is stable for at least 12 months when stored appropriately. Working dilutions should be discarded if not used within 12 hours.

Product Profile

A recommended working concentration of 1 µg/ml is determined by immunoblotting using HeLa cells. For immunoprecipitation, 2 µg/mg of protein lysate is recommended.

Note: In order to obtain best results using different techniques and preparations we recommend determining optimal working concentration by titration.

References

1. Plutzky, J., et al., Chromosomal localization of an SH2-containing tyrosine phosphatase (PTPN6). Genomics, **13**, 869-872 (1992).
2. Beghini, A., et al., RNA hyperediting and alternative splicing of hematopoietic cell phosphatase (PTPN6)

gene in acute myeloid leukemia. Hum. Molec. Genet., **9**, 2297-2304 (2000).
3. Xie, Z. H., et al., Positive regulation of c-Jun N-terminal kinase and TNF-α production but not histamine release by SHP-1 in RBL-2H3 mast cells., J. Immunol., **164**, 1521-1528 (2000).
4. Ganju, R. K., et al., β-chemokine receptor CCR5 signals through SHP1, SHP2, and Syk. J. Biol. Chem., **275**, 17263-17268 (2000).
5. Bittorf, T., et al., SHP1 protein tyrosine phosphatase negatively modulates erythroid differentiation and suppression of apoptosis in J2E erythroleukemic cells. Biol. Chem., **380**, 1201-1219 (1999).

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