

Product Information

Anti-Podocin

Developed in Rabbit
Affinity Isolated Antibody

Product Number **P 0372**

Product Description

Anti-Podocin is developed in rabbit using as immunogen a synthetic peptide corresponding to amino acid residues 367-383 of human podocin with an N-terminal added cysteine, conjugated to KLH. The corresponding sequence is identical in mouse and differs by one amino acid in rat. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-Podocin recognizes human, mouse, and rat podocin. Applications include immunoblotting and immunofluorescence staining of cultured cells. Additional weak bands may be detected when immunoblotting various extract preparations. Detection of podocin (doublet at ~42 kDa) by immunoblotting is specifically inhibited with the immunizing peptide. The upper band may represent a post-translational modified variant.¹

Podocytes are highly specialized visceral epithelial cells that cover the outer aspect of the glomerulus in the kidney. The foot processes of adjacent podocytes regularly interdigitate leaving between them filtration slits that are bridged by a thin slit diaphragm. This is an extracellular adherens-like junction that serves as a barrier to macromolecules and plays a crucial role in the glomerular filtration process. Podocin (NPHS2 protein) is an important member of a group of proteins shown to be associated with the slit diaphragm.¹⁻⁴ Podocin belongs to the band-7-stomatin family of lipid raft-associated proteins. It is a hairpin-like integral membrane protein with intracellular N- and C- termini. Podocin is located at the insertion site of the slit membrane, and is thought to act as a scaffold protein required to maintain or regulate the structural integrity of the slit diaphragm. It interacts there with nephrin (NPHS1 protein), a protein critical in development and function of the kidney filtration barrier and the adapter protein CD2-AP. Podocin is anchored in the glycosphingolipids and cholesterol rich lipid rafts of the outer leaflet of the plasma membrane and is partially localized with the actin cytoskeleton.⁵

In vitro studies suggest its involvement in nephrin signaling facilitation via AP-1 in HEK cells. In addition to its presence in the kidney, it was also reported in rat nervous tissue and possibly in vascular smooth muscle.^{6,7} Podocin is the target protein of autosomal recessive steroid-resistant nephrotic syndrome and in sporadic cases of non-familial focal segmental glomerulosclerosis. Many of the NPHS2 mutations lead to retention of the mutant proteins in the endoplasmic reticulum.⁸ Podocin-deficient mice have been found to develop proteinuria during the antenatal period and die shortly after birth from renal failure.⁹

Reagent

Anti-Podocin is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: Approx. 1 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 also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

By immunoblotting, a working antibody concentration of 0.5-1 µg/ml is recommended using whole extract of rat glomeruli and a chemiluminescent reagent.

By indirect immunofluorescence, a working antibody concentration of 10-20 µg/ml is recommended using acetone-fixed human or rat kidney frozen sections.

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

References

1. Schwartz, K., et al., *J. Clin. Invest.*, **108**, 1621-1629 (2001).
2. Saleem, M.A., et al., *Am. J. Pathol.*, **161**, 1459-1466 (2002).
3. Boute, N., et al., *Nature Genet.*, **24**, 349-354 (2000).
4. Caridi, G., et al., *J. Am. Soc. Nephrol.*, **12**, 2742-2746 (2001).
5. Huber, T.B., et al., *J. Biol. Chem.*, **276**, 41543-41546 (2001).
6. Kawachi, H., et al., *J. Am. Soc. Nephrol.*, **13**, 46-56 (2003).
7. Horinouchi, I., et al., *Kidney Int.*, **64**, 2092-2099 (2003).
8. Rosseli, S., et al., *Traffic*, **5**, 37-44 (2004).
9. Rosseli, S., et al., *Mol. Cell Biol.*, **24**, 550-560 (2004).

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