3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

ANTI-DESTRIN/ADF (GV-13)
Developed in Rabbit
Affinity Isolated Antibody

Product Number **D 8815**

Product Description

Anti-Destrin/ADF is developed in rabbits using as immunogen a synthetic peptide corresponding to amino acids 153-165 of human destrin/ADF with N-terminal added lysine, conjugated to KLH. The corresponding sequence is identical in pig, differs by one amino acid in mouse and rat and by two amino acids in chicken, and is absent in muscle and non-muscle cofilin. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-Destrin/ADF specifically recognizes human destrin/ADF by immunoblotting (~19 kDa) and immunofluorescence. Staining of destrin/ADF by immunoblotting is inhibited by the immunizing peptide. The product cross-reacts with rat, mouse, and dog destrin but not with recombinant chicken muscle cofilin.

Destrin/ADF (Actin Depolymerizing Factor) is a small phosphoinositide-sensitive actin-binding protein capable of depolymerizing actin-filaments *in vitro*. Under certain conditions it fragments the filaments and accelerates actin subunits dissociation from their 'pointed' (minus) ends. Destrin/ADF binds stoichiometrically to monomeric G-actin and to actin protomers in filaments in an apparently pH-dependent, Ca^{2+}-independent manner. Actin-ADP is preferentially bound.[1-5] Destrin/ADF intercalates between longitudinally associated actin monomers within the filament and distorts its helical twist. The sequence of destrin/ADF is highly homologous to that of cofilin, a related gelsolin-like actin filament-severing protein also belonging to the actin-depolymerizing factor/cofilin (AC) family.

Destrin/ADF and cofilin are widely distributed in tissues of eukaryotes and both contain a nuclear localization sequence. Destrin/ADF is found in various epithelial and endothelial cells but is practically absent from adult mouse heart and skeletal muscle cells.[6] Destrin/ADF and cofilin are usually found in regions containing dynamic actin pools such as the leading edge of migrating cells and neuronal growth cones and may also colocalize in cell nuclei. Both are present in 'Hirano bodies' in certain brain neurons of dementia patients. Destrin/ADF is important for many cellular processes involving actin remodeling such as motility at the leading edge of cells, polarized cell growth, endocytosis, phagocytosis, cellular activation, and cytokinesis. *In vivo* activity of vertebrate destrin/ADF is regulated through reversible phosphorylation and dephosphorylation at serine-3 (Ser^3). Dephosphorylation of destrin/ADF at this site was described in rat parotis response to β-adrenergic or cholinergic stimulation and also in dog thyroid cells following treatment with thyrotropin or phorbol ester.[7,8] The phosphorylated form is inactive and incapable of association with actin. Regulation of destrin/ADF in vertebrates is carried out by the Lim kinases 1and 2.[9]

Reagent

Anti-Destrin/ADF is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 1% bovine serum albumin and 15 mM sodium azide.

Antibody Concentration: Approx. 0.5-1.0 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 prolonged storage, freeze in working aliquots at –20 °C. 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
A minimum working dilution of 1:1,500 is determined by immunoblotting using whole extracts of human A-431 epidermoid carcinoma, rat PC-12 pheochromocytoma, and dog MDCK kidney cells.

A minimum working dilution of 1:100 is determined by indirect immunofluorescence using mouse NIH/3T3 fibroblasts.

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

References

1. Nishida, E., et al., Biochemistry, **24**, 6624-6630 (1985).
2. Abe, H., et al., Biochemistry, **29**, 7420-7425 (1990).
3. Moriyama, K., et al., J. Biol. Chem., **265**, 5768-5773 (1990).
4. Bamburg, R., Annu. Rev. Cell. Dev. Biol., **15**, 185-230 (1999).
5. Adams, M.E., et al., Biochemistry, **29**, 7414-7420 (1990).
6. Vartiainen, M.K., et al., Mol. Biol. Cell, **13**, 183-194 (2002).
7. Kanamori, T., et al., J. Biol. Chem., **270**, 8061-8067, (1995).
8. Saito, T., et al., Exp. Cell Res., **212**, 49-61 (1994).
9. Amano, T., et al., Biochem. J., **354**, 149-159 (2001).

RM/KAA 04/02