

PRODUCT INFORMATION



PAD4 (human, recombinant)

Item No. 10500

Overview and Properties

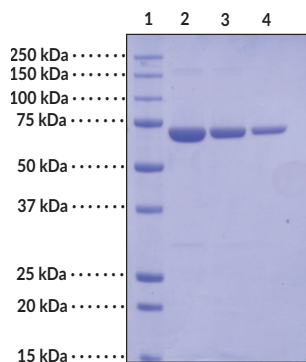
Synonyms: PADI4, PADI5, Peptidylarginine Deiminase 4, Protein Arginine Deiminase Type 4, Protein Arginine Deiminase Type IV
Source: Recombinant N-terminal His-tagged protein expressed in *E. coli*
Amino Acids: 2-663 (full-length)
Uniprot No.: Q9UM07
Molecular Weight: 75.8 kDa
Storage: -80°C (as supplied); avoid freeze/thaw cycles by aliquoting protein
Stability: ≥2 years
Purity: *batch specific* (≥85% estimated by SDS-PAGE)
Supplied in: 50 mM HEPES, pH 8.0, containing 300 mM sodium chloride, 1 mM DTT, and 10% glycerol

Protein

Concentration: *batch specific* mg/ml
Activity: *batch specific* U/ml
Specific Activity: *batch specific* U/mg
Unit Definition: One unit is defined as the amount of enzyme required to produce 1 nmol of NH₄⁺ per minute at 37°C in 50 mM HEPES, pH 7.7, containing 10 mM calcium chloride, 5 mM DTT, and 2 mM N-Benzoyl-L-Arginine Ethyl Ester (BAEE).

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

Image



Lane 1: MW Markers
Lane 2: PAD4 (4 μg)
Lane 3: PAD4 (2 μg)
Lane 4: PAD4 (1 μg)

Representative gel image shown; actual purity may vary between batches but protein will be ≥80% pure.

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
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Protein Arginine Deiminases (PADs) are guanidino-modifying enzymes belonging to the amidinotransferase superfamily and are designated PAD1-4 and PAD6. All enzymes are cytosolic except for PAD4 which is localized in the nucleus.¹ PAD4 is a homodimer that functions as a transcriptional coregulator to catalyze the conversion of specific arginine residues to citrulline in a calcium-dependent manner. PAD4 substrates include histones H2A, H3, and H4, whose post-translational modifications play a large role in gene regulation.² Benzoylated arginine substrates like N- α -Benzoyl-L-arginine ethyl ester (BAEE) have proven to be useful tools for characterization of PAD4, having similar kinetic properties to the natural substrates.³ PAD4 itself can undergo autocitrullination at several sites, which inhibits its enzymatic activity and may play an important role in regulating citrullination in cells.⁴ PAD4 activity is increased in rheumatoid arthritis, producing an abundance of citrulline-containing proteins that can be recognized by autoantibodies, which cause the immune system to attack its own tissues.⁵ PAD4 has also been implicated in several other diseases including multiple sclerosis, Alzheimer's disease, glaucoma, and cancer.¹

References

1. Shirai, H., Blundell, T.L., and Mizuguchi, K. *Trends Biochem. Sci.* **26**(8), 465-468 (2001).
2. Jones, J.E., Causey, C.P., Knuckley, B., et al. *Curr. Opin. Drug Discov. Devel.* **12**(5), 616-627 (2009).
3. Kearney, P.L., Bhatia, M., Jones, N.G., et al. *Biochemistry* **44**, 10570-10582 (2005).
4. Andrade, F., Darrah, E., Gucek, M., et al. *Arthritis Rheum.* (2010).
5. Hill, J.A., Southwood, S., Sette, A., et al. *J. Immunol.* **171**, 538-541 (2003).

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