

PRODUCT INFORMATION



PAD1 (human, recombinant)

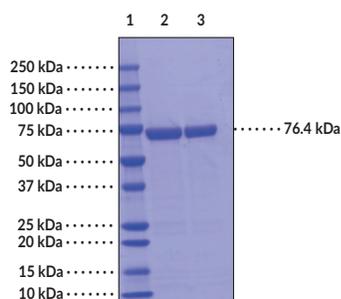
Item No. 10784

Overview and Properties

Synonyms: PADI1, PDI1, Peptidylarginine Deiminase 1, Protein Arginine Deiminase 1
Source: Active recombinant human N-terminal His-tagged PAD1 expressed in *E. coli*
Uniprot No.: Q9ULC6
Amino Acids: 2-663 (full length)
Molecular Weight: 76.4 kDa
Storage: -80°C (as supplied); avoid freeze/thaw cycles by aliquoting protein
Stability: ≥2 years
Purity: ≥95% estimated by SDS-PAGE
Supplied in: 50 mM HEPES, pH 8.0, with 150 mM sodium chloride, 1 mM DTT, and 20% 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.

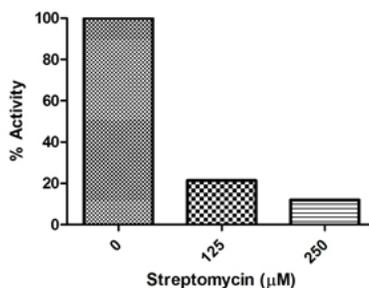
Images



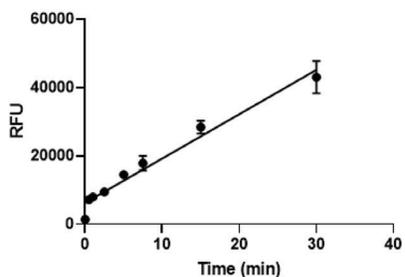
Lane 1: MW Markers
Lane 2: PAD1 (2 µg)
Lane 3: PAD2 (4 µg)

SDS-PAGE Analysis of PAD1.

Representative gel image shown; actual purity may vary between each batch.



Inhibition of PAD1 by Streptomycin



Activity of PAD1. PAD1 activity was determined using Cayman's PAD1 Inhibitor Screening Assay Kit (Ammonia) (Item No. 701450) with 2.6 µg PAD1 and 2 mM BAEE substrate.

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

Peptidyl arginine deiminase 1 (PAD1) is a calcium-dependent enzyme that catalyzes the conversion of arginine residues to citrulline within its cellular protein substrates, resulting in the loss of a positive charge, which can alter protein structure and/or function.^{1,2} It exists as a monomer and is composed of a C-terminal catalytic domain and two N-terminal immunoglobulin-like (Ig-like) domains.² PAD1 is primarily expressed in uterine and epidermal cells and generally localized in the cytosol.³ PAD1 citrullinates non-histone proteins, such as keratin, filaggrin, and MEK1, as well as histone H3 at arginine 2 (H3R2), H3R8, H3R17, and H4R3, to regulate epidermal cell progression and embryonic development.⁴⁻⁶ The catalytic activity of PAD1 is lost by deleting the first six N-terminal amino acids.² Decreased *Padi1* expression or PAD1 inhibition reduces citrullination of H3R2, H3R8, H3R17, and H4R3 and inhibits primary mouse embryo preimplantation development.⁷ *PADI1* mRNA is overexpressed in tumor tissue from patients with triple-negative breast cancer (TNBC), and PAD1 promotes proliferation and epithelial-to-mesenchymal transition (EMT) in a variety of TNBC cell lines *in vitro* and in mouse xenograft models.⁸ Cayman's PAD1 (human, recombinant) protein can be used for enzyme activity assay and Western blot (WB) applications.

References

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3. Nachat, R., Méchin, M.C., Takahara, H., *et al.* Peptidylarginine deiminase isoforms 1-3 are expressed in the epidermis and involved in the deimination of K1 and filaggrin. *J. Invest. Dermatol.* **124**(2), 384-93 (2005).
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