PRODUCT INFORMATION

PAD4 (L117M mutant; human, recombinant)

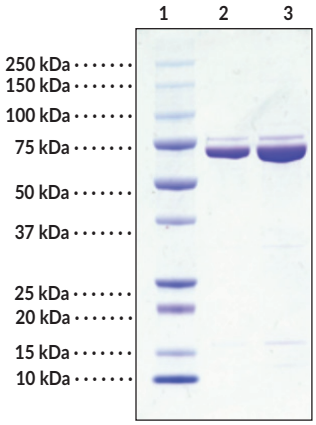
Item No. 44266

Overview and Properties

Synonyms:	PADI4 rs1748033, PADI5 (L117M), Protein Arginine Deiminase Type 4 (L117M), Protein Arginine Deiminase Type IV (L117M)
Source:	Active recombinant human N-terminal His-tagged PAD4 (L117M) expressed in *E. coli*
Amino Acids:	2-663
Uniprot No.:	Q9UM07
Molecular Weight:	75.74 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥80% estimated by SDS-PAGE
Supplied in:	50 mM HEPES, pH 8.0, 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 ammonium per minute at 37°C in 50 mM HEPES, pH 7.7, containing 10 mM calcium chloride, 5 mM DTT, and 2 mM BAEE.

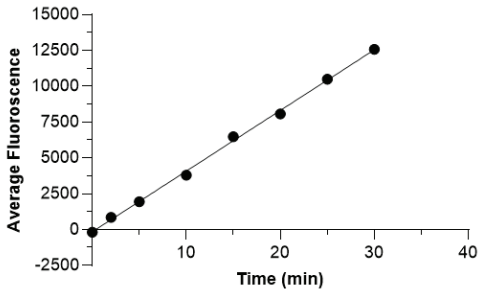
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: PAD4 (L117M) (2 µg)
Lane 3: PAD4 (L117M) (4 µg)

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



Activity of PAD4 (L117M). PAD4 activity was determined using Cayman's PAD4 Inhibitor Screening Assay Kit (Ammonia) (Item No. 700560) with 0.25 µg of PAD4 (L117M mutant; human, recombinant) and 2 mM BAEE substrate.

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Description

Protein arginine deiminase 4 (PAD4) catalyzes the conversion of arginine residues to citrulline within cellular protein substrates, resulting in the loss of a positive charge, which can alter protein structure and/or function.[1] It is expressed in neutrophils, as well as a variety of tissues, including the brain, liver, lung, and kidney.[1-3] PAD4 has a key role in NETosis, a lytic form of cell death characterized by the release of neutrophil extracellular traps (NETs).[1] Upon neutrophil activation, PAD4 translocates to the nucleus where it citrullinates histones, initiating chromatin decondensation and the release of NETs.[2,4,5] A missense mutation in *PADI4* leading to a leucine-to-methionine mutation at position 117 ($PAD4^{L117M}$) is associated with increased susceptibility to rheumatoid arthritis.[6-8] Cayman's PAD4 (L117M mutant; human, recombinant) protein can be used for enzyme activity assay and Western blot (WB) applications.

References

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3. Jones, J.E., Causey, C.P., Knuckley, B., *et al.* Protein arginine deiminase 4 (PAD4): Current understanding and future therapeutic potential. *Curr. Opin. Drug Discov. Devel.* **12(5)**, 616-627 (2009).
4. Li, P., Li, M., Lindberg, M.R., *et al.* PAD4 is essential for antibacterial innate immunity mediated by neutrophil extracellular traps. *J. Exp. Med.* **207(9)**, 1853-1862 (2010).
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6. Santhiya, P., Tharan, S.B., Govindaraju, K., *et al*. Deciphering the pathogenicity of PADI4 missense variant L117M in rheumatoid arthritis: An integrated *in silico* and gene expression study. *Int. J. Biol. Macromol*. **319(Pt 3)**, 145466 (2025).
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8. Bagheri-Hosseinabadi, Z., Mirzaei, M.R., Esmaeili, O., *et al*. Implications of peptidyl arginine deiminase 4 gene transcription and polymorphisms in susceptibility to rheumatoid arthritis in an Iranian population. *BMC Med. Genomics* **16(1)**, 104 (2023).

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