

Product Information

Peptidyl arginine deiminase type-2 (PAD2) human

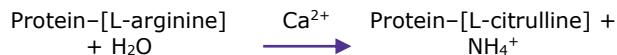
Recombinant, expressed in *Escherichia coli*

SAE0061

Product Description

Synonyms: Protein arginine iminohydrolase, PAD2, PADI2

Peptidyl Arginine Deiminases (PADs) perform post translational deiminations of proteins. PADs are calcium-dependent enzymes that catalyze the conversion of L-arginine residues to L-citrulline. The reaction that is catalyzed is as follows:



This deimination provides another level of regulating protein function.

There are five mammalian PADs sub-types, which differ in substrate specificity and tissue distribution. PAD enzymes are highly homologous, with 50-60% sequence similarity.¹ PAD enzymes play important roles in gene regulation by citrullination of arginine residues on histones H3, H2A, and H4. Overexpression of these enzymes has been found in several diseases such as rheumatoid arthritis, Alzheimer's disease, multiple sclerosis, lupus, Parkinson's disease, and cancer.^{2,3} PAD2 is widely expressed in the brain, secretory glands, and skeletal muscles. The enzyme was found to be responsible for hyper-citrullination of myelin basic protein, which is suspected to lead to multiple sclerosis.²

Product SAE0061 has been cited in the research literature.⁴

Precautions and Disclaimer

This product is for R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Product

The product is supplied in 20 mM Tris (pH 7.5), 200 mM NaCl, 10% (w/v) glycerol, 10 mM 2-mercaptoethanol, 1 mM EDTA, 1 mM DTT, 10 mM CaCl₂, 10 mM arginine, 30 mM maltose, and 0.6 mg/mL dodecyl-β-D maltoside.

Enzymatic activity: Activity is measured by a colorimetric method with the synthetic substrate benzoyl arginine ethyl ester (BAEE).⁵

Unit definition: One unit will produce 1 μmole of *N*-a-benzoylcitrulline ethyl ester from BAEE per hour at 55 °C at pH 7.2.

Storage/Stability

Store the product at -20 °C. The product is stable for at least 2 years as supplied.

Preparation Instructions

After first use, it is recommended to divide the enzyme into aliquots and immediately freeze at -20 °C. Avoid extended storage above freezing, as this will initially lead to an increase in enzymatic activity but may cause decreased stability. Avoid repeated freeze-thaw cycles. Do not store in a frost-free freezer.

References

1. Mohanan, S., et al., *Biochem. Res. Int.*, 895343 (doi: 10.1155/2012/895343) (2012).
2. Moscarello, M. A., et al., *Neurochem. Res.*, **32(2)**, 251-256 (2007)
3. Bicker, K. L., and Thompson, P. R., *Biopolymers*, **99(2)**, 155-163 (2013)
4. Mahneva, O. et al., *PLoS ONE*, **15(1)**, e0227822 (2020).
5. Takahara, H., et al., *J. Biochem.*, **94(6)**, 1945-1953 (1983).

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