PAD4 (human recombinant)
Item No. 10500

Overview and Properties

Synonyms: PADI4, PADI5, PDI5, Peptidylarginine Deiminase 4, Protein Arginine Deiminase 4
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: ≥9 months
Purity: batch specific (≥80% estimated by SDS-PAGE)
Supplied in: batch specific
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

PAD4 activity was determined using Cayman’s PAD4 Inhibitor Screening Assay Kit (Item No. 700560) with 0.25 µg PAD4 and 2 mM BAEE substrate.
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. 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. 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. PAD4 itself can undergo autocitrullination at several sites, which inhibits its enzymatic activity and may play an important role in regulating citrullination in cells. 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. PAD4 has also been implicated in several other diseases including multiple sclerosis, Alzheimer’s disease, glaucoma, and cancer.

References