

## Aminoacylase 1 Protein, Mouse, Recombinant (His)

### General Information

Synonyms:	1110014J22Rik;aminoacylase 1;Acy-1
Protein Construction:	A DNA sequence encoding the mouse ACY1 (Q99JW2) (Met 1-Ser 408) was expressed with a C-terminal polyhistidine tag. Predicted N terminal: Gln 18
Species:	Mouse
Expression Host:	HEK293 Cells
Accession:	Q99JW2
Molecular Weight:	45 kDa (predicted); 45 kDa (reducing conditions)

### QC Testing

Biological Activity:	Measured by its ability to cleave N-acetyl-L-Methione (Ac-Met). The specific activity is >4,000 pmoles/min/ $\mu$ g.
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/ $\mu$ g of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 $\mu$ m filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

### Preparation and Storage

**Reconstitution:**  
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

**Stability & Storage:**

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

**Shipping:**

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

### Protein Background

Aminoacylase 1 (ACY1), a metalloenzyme that removes amide-linked ACY1 groups from amino acids and may play a role in regulating responses to oxidative stress. Both the C-terminal fragment found in the two-hybrid screen and full-length ACY1 co-immunoprecipitate with SphK1. Though both C-terminal and full-length proteins slightly reduce SphK1 activity measured in vitro, the C-terminal fragment inhibits while full-length ACY1 potentiates the effects of SphK1 on proliferation and apoptosis. It suggested that ACY1 physically interacts with SphK1 and may

influence its physiological functions. As a homodimeric zinc-binding enzyme, Aminoacylase 1 catalyzes the hydrolysis of N alpha-acylated amino acids. Deficiency of Aminoacylase 1 due to mutations in the Aminoacylase 1 (ACY1) gene follows an autosomal-recessive trait of inheritance and is characterized by accumulation of N-acetyl amino acids in the urine.

### Reference

Sommer A, et al. (2011) The molecular basis of aminoacylase 1 deficiency. *Biochim Biophys Acta*. 1812(6): 685-90.  
Maceyka M, et al. (2004) Aminoacylase 1 is a sphingosine kinase 1-interacting protein. *FEBS Lett*. 568(1-3): 30-4.  
Cook RM, et al. (1993) Human aminoacylase-1. Cloning, sequence, and expression analysis of a chromosome 3p21 gene inactivated in small cell lung cancer. *J Biol Chem*. 268(23): 17010-7.

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