

PRODUCT INFORMATION



N-acetyl-L-Glutamic Acid

Item No. 37359

CAS Registry No.: 1188-37-0

Synonyms: N-Acetylglutamate,
N-Acetylglutamic Acid, NAG

MF: $C_7H_{11}NO_5$

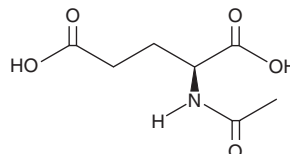
FW: 189.2

Purity: $\geq 90\%$

Supplied as: A solid

Storage: -20°C

Stability: ≥ 4 years



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

Laboratory Procedures

N-acetyl-L-Glutamic acid (NAG) is supplied as a solid. A stock solution may be made by dissolving the NAG in the solvent of choice, which should be purged with an inert gas. NAG is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of NAG in ethanol is approximately 5 mg/ml and approximately 30 mg/ml in DMSO and DMF.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of NAG can be prepared by directly dissolving the solid in aqueous buffers. The solubility of NAG in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

NAG is an endogenous metabolite.¹ It is an allosteric activator of mitochondrial carbamoyl phosphate synthetase, an enzyme involved in the urea cycle, and the first intermediate in arginine biosynthesis in bacteria.²⁻⁴ NAG inhibits human liver NAG synthase (NAGS; $K_i = 0.25$ mM).⁵ It also inhibits several enzymes involved in mitochondrial bioenergetics, including isocitrate dehydrogenase 2 (IDH2), mitochondrial complex IV, also known as cytochrome c oxidase, and glutamate dehydrogenase (GDH), in rat brain mitochondrial preparations when used at a concentration of 1 mM.⁶ Increased urine levels of NAG are associated with mutations in the gene encoding aminoacylase-1 (ACY1), an enzyme involved in the hydrolysis of N-acetylated proteins.¹

References

1. Sass, J.O., Mohr, V., Olbrich, H., et al. *Am. J. Hum. Genet.* **78**(3), 401-409 (2006).
2. Alonso, E. and Rubio, V. *Eur. J. Biochem.* **135**(2), 331-337 (1983).
3. Marshall, M., Metzenberg, R.L., and Cohen, P.P. *J. Biol. Chem.* **236**(8), 2229-2237 (1961).
4. Petri, K., Walter, F.R., Persicke, M., et al. *BMC Genomics* **14**, 713 (2013).
5. Coudé, F.X., Grimmer, G., Parvy, P., et al. *Biochem. Biophys. Res. Commun.* **102**(3), 1016-1020 (1981).
6. Bortoluzzi, V.T., Ribeiro, R.T., Pinheiro, C.V., et al. *Biochem. Biophys. Res. Commun.* **684**, 149123 (2023).

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.

Copyright Cayman Chemical Company, 01/17/2024

CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897
[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM