L-Glutamine

Product Number  G 3126
Store at Room Temperature

Product Description
Molecular Formula:  C₅H₁₀N₂O₃
Molecular Weight:  146.1
CAS Number:  56-85-9
pKₐ:  2.17 (-COOH), 9.13 (α-NH₃⁺)
Synonyms:  (S)-2,5-diamino-5-oxopentanoic acid, L-2-aminoglutaric acid, L-glutamic acid 5-amide, GLN, Q

L-Glutamine, the uncharged and amidated analog of L-glutamic acid, is an important amino acid for the incorporation of NH₄⁺ into biomolecules. It is biosynthesized from NH₄⁺ and glutamate via the enzyme glutamate synthetase. In turn, degradation of glutamine to free the ammonia moiety is mediated by glutaminase. Glutamine also participates in acid-base regulation in vivo.²,³,⁴

A study of the activation of the glnA, glnK, and nac promoters in Escherichia coli with glutamine as the sole nitrogen source has been reported.⁵ Under glucose deprivation, higher compensatory glutamine levels prevent decreased intracellular glutamate and GABA levels, while leading to enhanced intracellular aspartate levels, ammonia production, and neuronal damage.⁶

The utilization of glutamine under carbon starvation conditions by cultured Saccharomyces cerevisiae and its relation to the cytoplasmic compartmentation of the transcriptional activator Gln3 has been studied.⁷ The use of glutamine in cultured rat islets to probe α-ketoisocaproate oxidation has been investigated.⁸

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions
This product is soluble in 1 M HCl (50 mg/ml), yielding a clear, colorless solution. The solubility in water (25 °C) has been reported at 36 mg/ml.¹

Storage/Stability
A study of glutamine in Basal Medium Eagle with Earle's salts indicated that glutamine was most stable in medium stored at 4 °C and at neutral pH. Loss of glutamine accelerates at temperatures above 4 °C, such as room temperature and 35 °C. Glutamine was found to deteriorate at acidic and basic pH at similar rates. Further information on stability studies of glutamine is solution is available in a bulletin under Product No. G 7513 (200 mM L-glutamine solution)

References
2. The Merck Index, 12th ed., Entry# 4479.


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