

Product Information

L-Glutamine solution, 200 mM Cell Culture Tested

Catalog Number **G7513**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS RN 56-85-9

Product Description

This product is a 200 mM solution prepared in cell culture grade water with Catalog Number G8540, cell culture tested L-glutamine, and is 0.2 μm filtered.

L-glutamine is an essential amino acid that is a crucial component of culture media, which serves as a major energy source for cells in culture. Optimal cell performance usually requires supplementation of the medium with L-glutamine prior to use.

L-Glutamine, the uncharged and amidated analog of L-glutamic acid, is an important amino acid for the incorporation of NH_4^+ into biomolecules. It is biosynthesized from NH_4^+ 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*.^{1,2}

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.³ 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.⁴

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.⁵ The use of glutamine in cultured rat islets to probe α -ketoisocaproate oxidation has been investigated.⁶

Precautions and Disclaimer

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

Storage/Stability

This product ships on dry ice and storage at $-20\text{ }^{\circ}\text{C}$ is recommended. It should be used within 2 years. Once the product has been opened and refrigerated, it should be used in ~ 2 weeks. For longer storage, aliquot and freeze. There may be a loss of activity (up to 25%) due to multiple freeze/thaw cycles.

A study of glutamine in Basal Medium Eagle with Earle's salts indicated glutamine was most stable in medium stored at $4\text{ }^{\circ}\text{C}$ and at neutral pH. Loss of glutamine accelerates at temperatures above $4\text{ }^{\circ}\text{C}$, such as room temperature and $35\text{ }^{\circ}\text{C}$. Glutamine was found to deteriorate at acidic and basic pH at similar rates. Stability studies of glutamine in solution are available as General Information linked to the product display page of this product.

References

1. Biochemistry, 3rd ed., Stryer, L., W.H. Freeman (New York, NY: 1988), pp. 20, 505, 577, 579.
2. Textbook of Biochemistry with Clinical Correlations, 5th ed., Devlin, T.M., ed., Wiley-Liss (New York, NY: 2002), pp. 97, 784, 896-897.
3. Atkinson, M.R., et al., Activation of the *glnA*, *glnK*, and *nac* promoters as *Escherichia coli* undergoes the transition from nitrogen excess growth to nitrogen starvation. *J. Bacteriol.*, **184(19)**, 5358-5363 (2002).
4. Honegger, P., et al., Alteration of amino acid metabolism in neuronal aggregate cultures exposed to hypoglycaemic conditions. *J. Neurochem.*, **81(6)**, 1141-1151 (2002).
5. Cox, K.H., et al., Cytoplasmic compartmentation of *Gln3* during nitrogen catabolite repression and the mechanism of its nuclear localization during carbon starvation in *Saccharomyces cerevisiae*. *J. Biol. Chem.*, **277(40)**, 37559-37566 (2002).
6. Gao, Z., et al., Distinguishing features of leucine and α -ketoisocaproate sensing in pancreatic beta-cells. *Endocrinology*, **144(5)**, 1949-1957 (2003).

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