

## Product Data Sheet

Product Name: H-D-Gln-OH

Cat. No.: GA10942

### Chemical Properties

Cas. No. 5959-95-5

Chemical Name (2R)-2,5-diamino-5-oxopentanoic acid

SMILES C(CC(=O)N)C(C(=O)O)N

Formula  $C_5H_{10}N_2O_3$

M.Wt 146.2

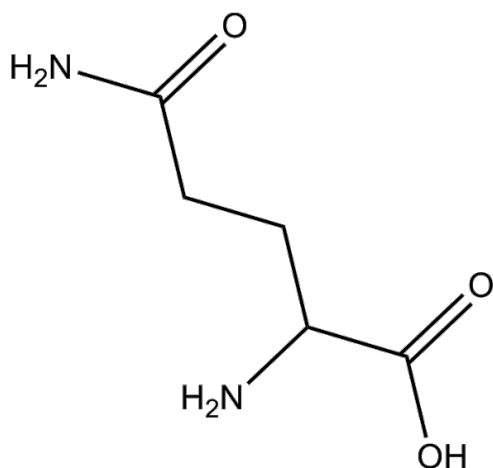
Solubility Ethanol: Partially soluble, PBS (pH 7.2): 10 mg/ml

Storage Store at RT

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



### Protocol

**Caution: Product has not been fully validated for medical applications. For research use only.**

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**Cell experiment:** Effect of D-Glutamine and glutaminase inhibitor on acetaldehyde-induced permeability. Caco-2 cell monolayers are incubated for 4 h without or with acetaldehyde (600  $\mu$ M) and L-Glutamine or D-Glutamine (2 mM) in the absence or presence of 6-diazo-5-oxo-L-norleucine (DON). Transepithelial electrical resistance (TER) and FITC-inulin flux are measured. Values are means $\pm$ SE (n=6)[2].

### References:

- [1]. Leke R, et al. The Glutamine Transporters and Their Role in the Glutamate/GABA-Glutamine Cycle. *Adv Neurobiol.* 2016;13:223-257.
- [2]. Seth A, et al. L-Glutamine ameliorates acetaldehyde-induced increase in paracellular permeability in Caco-2 cell monolayer. *Am J Physiol Gastrointest Liver Physiol.* 2004 Sep;287(3):G510-7.

### Background

D-Glutamine is a cell-permeable D type stereoisomer of Glutamine.

Glutamine is a key amino acid in the central nervous system (CNS), playing an important role in the glutamate/GABA-Glutamine cycle (GGC). In the GGC, Glutamine is transferred from astrocytes to neurons, where it will replenish the inhibitory and excitatory neurotransmitter pools[1]. D-Glutamine has been used to study its role in conferring protection against acetaldehyde-induced disruption of barrier function in Caco-2 cell monolayer. Role of L-Glutamine in the protection of intestinal epithelium from acetaldehyde-induced disruption of barrier function is evaluated in Caco-2 cell monolayer. L-Glutamine reduced the acetaldehyde-induced decrease in transepithelial electrical resistance and increase in permeability to inulin and lipopolysaccharide in a time- and dose-dependent manner; D-Glutamine, L-asparagine, L-arginine, L-lysine, or L-alanine produced no significant protection. D-Glutamine also fails to influence the acetaldehyde-induced decrease in TER and increase in inulin flux. D-Glutamine or glutaminase inhibitor by themselves did not influence TER or inulin flux in control or acetaldehyde-treated cell monolayers. Lack of effect of D-Glutamine in protection from acetaldehyde indicates that the L-Glutamine-mediated protection is stereospecific[2].

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