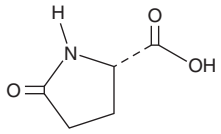
PRODUCT INFORMATION

L-Pyroglutamic Acid

Item No. 36531

CAS Registry No.: 98-79-3
Formal Name: 5-oxo-L-proline
Synonyms: NSC 143034, (S)-5-Oxoproline, (–)-Pyroglutamic Acid,
MF: $C_5H_7NO_3$
FW: 129.1
Purity: ≥95%
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

L-Pyroglutamic acid is supplied as a solid. A stock solution may be made by dissolving the L-pyroglutamic acid in the solvent of choice, which should be purged with an inert gas. L-Pyroglutamic acid is soluble in organic solvents such as ethanol, DMSO and dimethyl formamide (DMF). The solubility of L-pyroglutamic acid in DMSO is approximately 20 mg/ml and approximately 16 mg/ml in DMF. L-Pyroglutamic acid is slightly soluble in ethanol.

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 L-pyroglutamic acid can be prepared by directly dissolving the solid in aqueous buffers. The solubility of L-pyroglutamic acid in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

L-Pyroglutamic acid is a cyclized form of L-glutamic acid (Item No. 30377). It is formed from L-glutamic acid or L-glutamine (Item No. 23716) by glutaminyl cyclase.[1] A pyroglutamic acid-containing amyloid-β (Aβ) peptide (pGlu-Aβ (3-42)) aggregates at a higher rate than Aβ (3-42) and Aβ42 (Item No. 20574) when used at a concentration of 10 µM. It is a component of the neuropeptide adipokinetic hormone (AKH) in insects, a hormone that stimulates fatty acid oxidation during flight to provide energy.[2] L-Pyroglutamic acid (500 mg/kg) increases the number of received shocks in the Vogel punished drinking task, indicating anxiolytic-like activity, in rats.[3] Plasma levels of L-pyroglutamic acid are increased in patients with end-stage renal disease and pGlu-containing Aβ plaques have been found in brain tissue from patients with Alzheimer's disease.[4,5] L-Pyroglutamic acid has been used in the synthesis of fibroblast activation protein (FAP) inhibitors.[6]

References

1. Schilling, S., Lauber, T., Schaupp, M., *et al. Biochemistry* **45(41)**, 12393-12399 (2006).
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3. Beni, M., Pellegrini-Giampietro, D.E., and Moroni, F. *Fundam. Clin. Pharmacol.* **2(2)**, 77-82 (1988).
4. Palekar, A.G., Tate, S.S., Sullivan, J.F., *et al. Biochem. Med.* **14(3)**, 339-345 (1975).
5. Wirths, O., Bethge, T., Marcello, A., *et al. J. Neural Transm. (Vienna)* **117(1)**, 85-96 (2010).
6. Tsai, T.-Y., Yeh, T.-K., Chen, X., *et al. J. Med. Chem.* **53(18)**, 6572-6583 (2010).

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