

Product Data Sheet

Product Name: L-Tryptophan-d5

Cat. No.: GC49370

Chemical Properties

Cas. No. 62595-11-3

SMILES OC([C@@H](N)CC1=C([2H])NC2=C([2H])C([2H])=C([2H])C([2H])=C12)=O

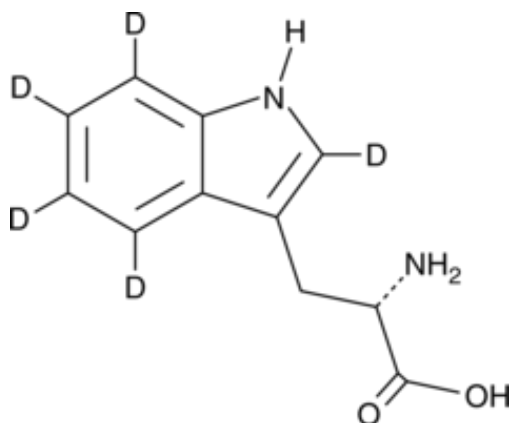
Formula $C_{11}H_7D_5N_2O_2$ M.Wt 209.3

Solubility PBS (pH 7.2): 1 mg/ml Storage Store at -20°C, protect from light, stored under nitrogen

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



Background

L-Tryptophan-d5 is a deuterated compound of L-tryptophan used as a standard in GC or LC-MS quantification^[1]. L-Tryptophan is an essential amino acid and a precursor of serotonin, melatonin, and vitamin B3^[2]. L-Tryptophan serves as a substrate for tryptophan hydroxylase (TPH), indoleamine-2,3-dioxygenase (IDO), and tryptophan-2,3-dioxygenase (TDO) for the biosynthesis of serotonin (5-HT) and kynurenine^[3]. L-Tryptophan is also metabolized to indole, pyruvate, and ammonia by intestinal bacteria expressing tryptophanase^[4].

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

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In vivo, oral administration of L-tryptophan (300mg/kg) to Wistar rats during the day (8:00) increased the levels of 5-HT, 5-hydroxy-L-tryptophan (5-HTP), and 5-hydroxyindole-3-acetic acid (5-HIAA) in the diencephalon of rats. When administered at night (20:00), 5-HT decreased, but the 5-HT/5-HIAA ratio remained unchanged, and melatonin levels and the innate immune response of peritoneal macrophages increased significantly^[5].

References:

- [1] Kyle J E, Stratton K G, Zink E M, et al. A resource of lipidomics and metabolomics data from individuals with undiagnosed diseases[J]. Scientific data, 2021, 8(1): 114.
- [2] Richard D M, Dawes M A, Mathias C W, et al. L-tryptophan: basic metabolic functions, behavioral research and therapeutic indications[J]. International Journal of Tryptophan Research, 2009, 2: IJTR. S2129.
- [3] Modoux M, Rolhion N, Mani S, et al. Tryptophan metabolism as a pharmacological target[J]. Trends in pharmacological sciences, 2021, 42(1): 60-73.
- [4] Bosi A, Banfi D, Bistoletti M, et al. Tryptophan metabolites along the microbiota-gut-brain axis: an interkingdom communication system influencing the gut in health and disease[J]. International Journal of Tryptophan Research, 2020.
- [5] Esteban S, Nicolaus C, Garmundi A, et al. Effect of orally administered L-tryptophan on serotonin, melatonin, and the innate immune response in the rat[J]. Molecular and cellular biochemistry, 2004, 267: 39-46.

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