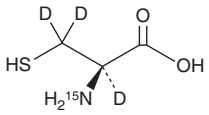
PRODUCT INFORMATION

L-Cysteine-^{15}N-d_3

Item No. 34838

CAS Registry No.:	1795787-05-1
Formal Name:	L-cysteine-2,3,3-d_3-^{15}N
Synonyms:	L-Cys-^{15}N-d_3, L-(+)-Cysteine-^{15}N-d_3, (R)-Cysteine-^{15}N-d_3
MF:	$C_3H_4D_3[^{15}N]O_2S$
FW:	125.2
Chemical Purity:	≥95% (L-cysteine)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_3); ≤1% d_0
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-Cysteine-^{15}N-d_3 is intended for use as an internal standard for the quantification of L-cysteine (Item No. 33309) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

L-Cysteine-^{15}N-d_3 is supplied as a solid. A stock solution may be made by dissolving the L-cysteine-^{15}N-d_3 in the solvent of choice, which should be purged with an inert gas. L-Cysteine-^{15}N-d_3 is slightly soluble in methanol.

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-cysteine-^{15}N-d_3 can be prepared by directly dissolving the solid in aqueous buffers. L-Cysteine-^{15}N-d_3 is slightly soluble in PBS (pH 7.2). We do not recommend storing the aqueous solution for more than one day.

Description

L-Cysteine is a conditionally essential amino acid.[1,2] It is produced from L-methionine through the transsulfuration pathway.[1] L-Cysteine can also be derived from dietary sources and protein turnover. It is a precursor in the biosynthesis of the intracellular antioxidant glutathione (GSH; Item No. 10007461). L-Cysteine supplementation increases GSH levels as well as decreases oxidative stress and pro-inflammatory cytokine levels in various rat and porcine disease models, including type 2 diabetes, aging, and inflammatory bowel disease (IBD). It is also an excitotoxin, inducing neuronal damage by overactivation of NMDA receptors.[2]

References

1. Yin, J., Ren, W., Yang, G., *et al.* L-Cysteine metabolism and its nutritional implications. *Mol. Nutr. Food Res.* **60(1)**, 134-146 (2016).
2. Janáky, R., Varga, V., Hermann, A., *et al.* Mechanisms of L-cysteine neurotoxicity. *Neurochem. Res.* **25(9-10)**, 1397-1405 (2000).

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