

## Small Molecules

### L-Cysteine

Amino acid

Catalog #100-1128

250 g



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## Product Description

L-Cysteine is a semi-essential amino acid found in high-protein foods. It is important for protein synthesis and plays a role in regulating cell signaling pathways (Yin et al.). L-cysteine has been shown to enhance papain activity (Homaei et al.).

Alternative Names: L-Cys; L-(+)-Cysteine; (R)-Cysteine; NSC 8746

CAS Number: 52-90-4

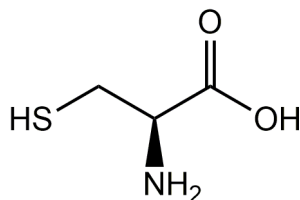
Chemical Formula:  $C_3H_7NO_2S$

Molecular Weight: 121.2 g/mol

Purity:  $\geq 95\%$

Chemical Name: Not applicable

Structure:



## Properties

Physical Appearance: A solid

Storage: Product stable at -20°C as supplied. As a precaution, STEMCELL recommends storing all small molecules away from direct light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt.

Solubility: • PBS (pH 7.2)  $\leq 200$  mM  
• Deionized water  $\leq 200$  mM

For example, to prepare a 10 mM stock solution in PBS (pH 7.2), resuspend 10 mg in 8.3 mL of PBS (pH 7.2).

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported; however, as a general guide we recommend storage in PBS (pH 7.2) at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use.

## Published Applications

### DISEASE MODELING

- Increases insulin sensitivity by upregulating glutathione (GSH) and adiponectin in 3T3-L1 adipocyte model (Achari and Jain).
- Restores cellular glutathione and inhibits the expression of cell adhesion molecules in G6PD-deficient human U937 monocytes (Parsanathan and Jain).
- Promotes the conversion of microglia from an inflammatory M1 to an anti-inflammatory M2 phenotype in mouse ischemia-hypoxia models. L-cysteine suppressed the production of inflammatory cytokines, while up-regulating anti-inflammatory cytokines in the damaged mouse cortex. L-cysteine also inhibited neuronal cell apoptosis induced by conditioned media from activated M1 microglia in vitro (Zhou et al.).

## References

- Achari AE & Jain SK. (2017) L-Cysteine supplementation increases insulin sensitivity mediated by upregulation of GSH and adiponectin in high glucose treated 3T3-L1 adipocytes. *Arch Biochem Biophys* 630: 54–65.
- Homaei AA et al. (2010) Cysteine enhances activity and stability of immobilized papain. *Amino Acids* 38(3): 937–42.
- Parsanathan R & Jain SK. (2018) L-Cysteine in vitro can restore cellular glutathione and inhibits the expression of cell adhesion molecules in G6PD-deficient monocytes. *Amino Acids* 50(7): 909–21.
- Yin J et al. (2016) L-Cysteine metabolism and its nutritional implications. *Mol Nutr Food Res* 60(1): 134–46.
- Zhou X et al. (2019) L-Cysteine-derived H<sub>2</sub>S promotes microglia M2 polarization via activation of the AMPK pathway in hypoxia-ischemic neonatal mice. *Front Mol Neurosci* 12: 58.

## Related Small Molecules

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**This product is hazardous. Please refer to the Safety Data Sheet (SDS).**

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