



## Product Information

### Taurine

Product Number **T 0625**  
Store at Room Temperature

#### Product Description

Molecular Formula:  $C_2H_7NO_3S$   
Molecular Weight: 125.1  
CAS Number: 107-35-7  
 $pK_a$  (-SO<sub>3</sub>H): 1.5<sup>1,2</sup>  
 $pK_a$  (-NH<sub>3</sub>): 9.06<sup>1</sup>, 8.74<sup>2</sup>  
Synonym: 2-aminoethanesulfonic acid

Taurine is a sulfonated amino acid that occurs abundantly *in vivo*, and is found in oxen lung, shark blood, mussels and oysters. It is produced through the metabolism of cysteine via the formation of the intermediates cysteinesulfinate and hypotaurine. Taurine has been proposed to play important roles in such biological functions as regulating intracellular calcium, osmoregulation, brain development (particularly for cerebellum and retina cells), and in the enhancement of bile flow and cholesterol clearance by the liver. Taurine may be conjugated to bile acids and secreted in the duodenum.<sup>2,3</sup>

Taurine has been used as a sulfur source in examining the gene expression profile of transporters in *Bacillus subtilis* via DNA array analysis.<sup>4</sup> A report on the use of taurine as a sole sulfur source by several strains of *E. coli* has been published.<sup>5</sup> The cytoprotective role of taurine has been investigated in cell culture.<sup>6</sup> Taurine uptake in lactating porcine mammary tissue has been studied.<sup>7</sup>

Taurine has been detected as a constituent of mitochondrial transfer RNA, in the form of the modified uridines 5-taurinomethyluridine and 5-taurinomethyl-2-thiouridine.<sup>8</sup> Taurines react with hypohalous acids to form taurine haloamines, which have been studied for their protective effects against parasites and *in vivo* oxidative species.<sup>9,10</sup>

A comparison of different LC analytical methods for the detection of underivatized amino acids, including taurine, has been published.<sup>11</sup>

#### Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

#### Preparation Instructions

This product is soluble water (50 mg/ml), with heat as needed, yielding a clear, colorless solution.

#### References

1. Data for Biochemical Research, 3rd ed., Dawson, R. M. C., et al., Oxford University Press (New York, NY: 1986), p. 28.
2. The Merck Index, 12th ed., Entry# 9241.
3. Textbook of Biochemistry with Clinical Correlations, 5th ed., Devlin, T. M., ed., Wiley-Liss (New York, NY: 2002), pp. 807-808, 1105, 1107.
4. Auger, S., et al., Global expression profile of *Bacillus subtilis* grown in the presence of sulfate or methionine. *J. Bacteriol.*, **184(18)**, 5179-5186 (2002).
5. Eichhorn, E., and Leisinger, T., *Escherichia coli* utilizes methanesulfonate and L-cysteate as sole sulfur sources for growth. *FEMS Microbiol. Lett.*, **205(2)**, 271-275 (2001).
6. Eppler, B., and Dawson, R., Jr., Cytoprotective role of taurine in a renal epithelial cell culture model. *Biochem. Pharmacol.*, **63(6)**, 1051-1060 (2002).
7. Bryson, J. M., et al., Cellular uptake of taurine by lactating porcine mammary tissue. *Comp. Biochem. Physiol. B Biochem. Mol. Biol.*, **128(4)**, 667-673 (2001).
8. Suzuki, T., et al., Taurine as a constituent of mitochondrial tRNAs: new insights into the functions of taurine and human mitochondrial diseases. *EMBO J.*, **21(23)**, 6581-6589 (2002).
9. Englert, R. P., and Shacter, E., Distinct modes of cell death induced by different reactive oxygen species: amino acyl chloramines mediate hypochlorous acid-induced apoptosis. *J. Biol. Chem.*, **277(23)**, 20518-20526 (2002).

10. Yazdanbakhsh, M., et al., Killing of schistosomula by taurine chloramine and taurine bromamine. Am. J. Trop. Med. Hyg., **37(1)**, 106-110 (1987).

11. Petritis, K., et al., A comparative study of commercial liquid chromatographic detectors for the analysis of underivatized amino acids. J. Chromatogr. A, **961(1)**, 9-21 (2002).

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