

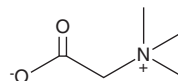
# PRODUCT INFORMATION



## Betaine

Item No. 26814

**CAS Registry No.:** 107-43-7  
**Formal Name:** 1-carboxy-N,N,N-trimethyl-methanaminium, inner salt  
**Synonyms:** Glycine Betaine, N,N,N-Trimethylglycine  
**MF:** C<sub>5</sub>H<sub>11</sub>NO<sub>2</sub>  
**FW:** 117.1  
**Purity:** ≥95%  
**Supplied as:** A crystalline 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

Betaine is supplied as a crystalline solid. Aqueous solutions of betaine can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of betaine in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

Betaine is a quaternary ammonium compound with diverse biological activities.<sup>1-3</sup> It has been found in spinach and can be acquired through the diet or formed *via* oxidation of betaine aldehyde (Item No. 17270) during choline metabolism in the liver and kidney.<sup>1,4</sup> Betaine has roles in osmoregulation and serves as a methyl donor in the conversion of homocysteine to methionine.<sup>1</sup> Betaine (1.5% w/v in drinking water) reduces serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) activity, increases serum HDL levels, decreases serum LDL levels, and reduces hepatic steatosis and inflammation in a mouse model of non-alcoholic fatty liver disease (NAFLD) induced by a methionine- and choline-deficient diet.<sup>2</sup> It also reduces plasma levels of total homocysteine (tHcy), S-adenosylmethionine (AdoMet), S-adenosylhomocysteine (AdoHcy; Item No. 13603), and cystathionine, and attenuates hypercoagulation in a mouse model of homocystinuria.<sup>3</sup> Formulations containing betaine have been used in the treatment of homocystinuria.

### References

1. Ueland, P.M. Choline and betaine in health and disease. *J. Inherit. Metab. Dis.* **34(1)**, 3-15 (2011).
2. Veskovic, M., Mladenovic, D., Milenkovic, M., *et al.* Betaine modulates oxidative stress, inflammation, apoptosis, autophagy, and Akt/mTOR signaling in methionine-choline deficiency-induced fatty liver disease. *Eur. J. Pharmacol.* **848**, 39-48 (2019).
3. Maclean, K.N., Sikora, J., Kožich, V., *et al.* A novel transgenic mouse model of CBS-deficient homocystinuria does not incur hepatic steatosis or fibrosis and exhibits a hypercoagulative phenotype that is ameliorated by betaine treatment. *Mol. Genet. Metab.* **101(2-3)**, 153-162 (2010).
4. Sakamoto, A., Nishimura, Y., Ono, H., *et al.* Betaine and homocysteine concentrations in foods. *Pediatr. Int.* **44(4)**, 409-413 (2002).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

#### WARRANTY AND LIMITATION OF REMEDY

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