# PRODUCT INFORMATION

## N-acetyl-L-Cysteine

*Item No. 20261*

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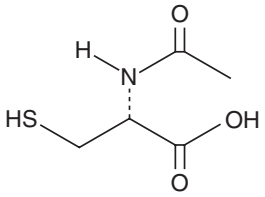
| **CAS Registry No.:** | 616-91-1 |
| **Formal Name:** | N-acetyl-L-cysteine |
| **Synonyms:** | Acetylcysteine, NAC, NSC 111180 |
| **MF:** | $C_5H_9NO_3S$ |
| **FW:** | 163.2 |
| **Purity:** | ≥95% |
| **Supplied as:** | A crystalline solid |
| **Storage:** | -20°C |
| **Stability:** | ≥4 years |




*Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.*

### Laboratory Procedures

N-acetyl-L-Cysteine (NAC) is supplied as a crystalline solid. A stock solution may be made by dissolving the NAC in the solvent of choice, which should be purged with an inert gas. NAC is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of NAC in these solvents is approximately 50 mg/ml.

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 NAC can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of NAC in PBS (pH 7.2) is approximately 30 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

(NAC) is an antioxidant and precursor of glutathione that has multiple effects in cells and animals. As an antioxidant, NAC scavenges hydrogen peroxide, hydroxyl radical, and hypochlorous acid.[1,2] NAC may be deacetylated to cysteine, which can be combined with glutamate and glycine to produce reduced glutathione (Item No. 10007461), which serves to reduce hydroperoxides and detoxify xenobiotics.[1,2] The free sulfhydryl group of NAC can also hydrolyze disulfide bonds of mucins and other proteins, thus facilitating clearance of mucus.[3] Through these actions, NAC inhibits DNA adduct formation, limits hepatotoxic effects of acetaminophen, and provides diverse cytoprotective effects *in vivo*.[1-6]

### References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2. Kelly, G. S. Clinical applications of N-acetylcysteine. *Altern. Med. Rev.* **3(2)**, 114-127 (1998).
3. Rubin, B. K. Aerosol medications for treatment of mucus clearance disorders. *Respir. Care* **60(6)**, 825-829 (2015).
4. Cavalieri, E. L. R., E.G. Depurinating estrogen-DNA adducts, generators of cancer initiation: Their minimization leads to cancer prevention. *Clin. Transl. Med.* **5(1)**, (2016).
5. Izzotti, A., D'Agostini, F., Bagnasco, M., *et al.* Chemoprevention of carcinogen-DNA adducts and chronic degenerative diseases. *Cancer Res.* **54(7 suppl)**, 1994s-1998s (1994).
6. Yoon, E., Babar, A., Choudhary, M., *et al.* Acetaminophen-induced hepatotoxicity: A comprehensive update. *J. Clin. Transl. Hepatol.* **4(2)**, 131-142 (2016).





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