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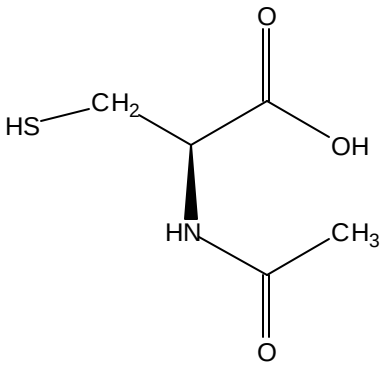
ProductInformation

N-ACETYL-L-CYSTEINE
Sigma Prod. No. **A7250,**
Fluka 01039, Aldrich 138061



CAS NUMBER: 616-91-1
SYNONYMS: L-alpha-acetamido-beta-mercaptopropionic acid, acetein, acetylcysteine, N-acetylcysteine, N-acetyl-N-cysteine, N-acetyl-3-mercaptoalanine, airbron, broncholysin, fluimucetin, fluimucil, flumicil, inspir, mercapturic acid, mucolyticum, mucolyticum lappe, mucolytikum lappe, mucomyst, mucosolvin, NAC, NAC-TB, NSC 111180, parvolex, respaire

PHYSICAL PROPERTIES:

Appearance: White to white with light yellow cast powder
Melting Point: 109-110°C[1]
Molecular formula: $C_5H_9NO_3S$
Formula weight: 163.2 (anhydrous)
pKa: 9.5 at 30°C[2]
Optical rotation: +5°(c = 3% in water)[3]
Purity: Not less than 99% (TLC)

METHOD OF PREPARATION:

Sigma's product is prepared from the acetylation of cysteine from human hair.

STABILITY / STORAGE AS SUPPLIED:

This product if stored at 2-8°C has a shelf-life of 3 years.

SOLUBILITY / SOLUTION STABILITY:

N-acetyl-L-cysteine is soluble 1 in 8 of water and 1 in 2 of ethanol. It is practically insoluble in chloroform and ether.[2]
Sigma has dissolved this product in water at 100 mg/mL with heating and obtained a clear, colorless solution.

SOLUBILITY / SOLUTION STABILITY: (continued)

Aqueous solutions of cysteine oxidize to cystine on contact with air at neutral or alkaline pH. Oxidation is accelerated by traces of heavy metals, especially copper and iron; relatively stable in acid. [4] This information is for Cysteine but will likely be applicable to N-acetyl-L-cysteine as well.

APPLICATIONS:

Some applications of N-acetyl-L-cysteine include its use as an anti-inflammatory drug to prevent liver damage by tylenol overdoses,[5] as a sputum liquefying agent,[6,7] and as an inhibitor of HIV replication.[8] A review of animal pharmacology and biochemistry is presented in Pharmacological and Biochemical Properties of Drug Substances, vol. 2, 479-488 (M.E. Goldberg, Ed., American Pharm. Association, Washington, D.C., 1979).

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