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ProductInformation

3-Methylbutanol

Product Number **I 3643**
Store at Room Temperature

Product Description

Molecular Formula: $C_5H_{12}O$
Molecular Weight: 88.15
CAS Number: 123-51-3
Synonyms: isoamyl alcohol, isopentyl alcohol, 3-methyl-1-butanol

This product is designated as Molecular Biology grade and is suitable for use in nucleic acid purification.

3-Methyl-1-butanol, commonly called isoamyl alcohol, is routinely used in molecular biology, notably in the purification of DNA. It is widely used in conjunction with phenol and chloroform, for the removal of proteins from the nucleic acid solutions by extraction. The addition of chloroform and isoamyl alcohol in the extraction protocol deals with two issues that the use of phenol alone does not completely address:

1. Isoamyl alcohol helps to inhibit RNase activity, which phenol does not completely inhibit,
2. Isoamyl alcohol helps to prevent the solubilization in the phenol phase of long RNA molecules with long poly(A) portions.

In addition, isoamyl alcohol reduces foaming during the extraction process. Isoamyl alcohol may also be used in the extraction of ethidium bromide from DNA solutions and in the radiolabeling of RNA transcripts in nuclei that have been isolated from tissue.[1]

Isoamyl alcohol is often used in the HPLC analysis of various pharmaceuticals and metabolites.[2,3,4] It has been used in the analysis of oxidized and reduced pyridine nucleotides and adenylates in organic phenol extracts from mitochondria.[5] A phenol:chloroform:isoamyl alcohol procedure for the extraction of chloroplast DNA that avoids density gradient differential centrifugation has been published.[6] A protocol for the isolation of mRNA from a thermophilic cyanobacterium that incorporates a phenol:chloroform:isoamyl alcohol mixture has been described.[7]

Precautions and Disclaimer

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

Preparation Instructions

This product is miscible in ethanol [0.1 ml/ml, 10% (v/v)], yielding a clear, colorless solution.

References

1. Molecular Cloning: A Laboratory Manual, 3rd ed., Sambrook, J. and Russell, D.W., CSHL Press (Cold Spring Harbor, NY: 2001), pp. 1.73, 6.24-6.27, 17.27-17.28, A1.23, A8.10.
2. van de Merbel, N. C., et al., Validated liquid chromatographic method for the determination of bexarotene in human plasma. J. Chromatogr. B Analyt. Technol. Biomed. Life Sci., **775(2)**, 189-195 (2002).
3. Dawson, M., et al., A rapid and sensitive high-performance liquid chromatography-electrospray ionization-triple quadrupole mass spectrometry method for the quantitation of oxycodone in human plasma. J. Chromatogr. Sci., **40(1)**, 40-44 (2002).
4. De Baere, S. M., et al., Identification and quantitation of despropionyl-bezitramide in postmortem samples by liquid chromatography coupled to electrospray ionization tandem mass spectrometry. Anal. Chem., **71(14)**, 2908-2914 (1999).
5. Noack, H., et al., Evaluation of a procedure for the simultaneous determination of oxidized and reduced pyridine nucleotides and adenylates in organic phenol extracts from mitochondria. Anal. Biochem., **202(1)**, 162-165 (1992).

6. Mariac, C., et al., Chloroplast DNA extraction from herbaceous and woody plants for direct restriction fragment length polymorphism analysis. Biotechniques, **28(1)**, 110-113 (2000).

7. Luo, X. Z., et al., Isolation of full-length RNA from a thermophilic cyanobacterium. Biotechniques, **23(5)**, 904-906, 908, 910 (1997).

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