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ProductInformation

Hexadecyltrimethylammonium bromide

Product Number **H 6269**
Store at Room Temperature

Product Description

Molecular Formula: $C_{19}H_{42}BrN$
Molecular Weight: 364.5
CAS Number: 57-09-0
Melting Point: 237-243 °C[1]
Critical Micelle Concentration (CMC): 0.92 to 1.0 mM (water)[2,3]
Aggregation number: 61 (water, 25 °C), 169 (13 mM KBr)[2,4]
pH: 6.0-7.5 (0.1 M H_2O, 0 °C).[5]
Synonyms: CTAB, cetrimonium bromide, *N*,*N*,*N*-trimethyl-1-hexadecanaminium bromide, cetyltrimethylammonium bromide[1]

This product is designated as Molecular Biology grade and is suitable for use in DNA precipitation. It has been analyzed for the absence of nucleases.

Hexadecyltrimethylammonium bromide (CTAB) is a bactericidal, cationic detergent. Its activity is neutralized by soaps and anionic detergents, such as sodium dodecyl sulfate (SDS). Trimethylammonium bromide compounds form insoluble complexes with SDS.[3] CTAB is active at alkaline pH against both Gram positive and Gram negative organisms.[6]

CTAB has been used for the isolation of plant high molecular weight DNA (by a rapid method)[7] as well as plant DNA for use in PCR analysis.[7,8,9]
It has been utilized to precipitate nucleic acids.[7,8,10,11]

CTAB provides enhancement of Concanavalin A mediated agglutination.[12] It has been used for the determination of protein molecular weights in electrophoretic systems and for the CMC determination of detergents.[13,14,15] CTAB has also been utilized as a titrant for potentiometric titration of perchlorate and as a phase-transfer catalyst in reduction of arenes and heterocyclic compounds.[16,17]

Precautions and Disclaimer

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

Preparation Instructions

The product is soluble in water (100 mg/ml). It is freely soluble in alcohol; sparingly soluble in acetone. It is practically insoluble in ether and benzene.[1]

Storage/Stability

The product is stable in acid solution.[1]

References

1. The Merck Index, 12th ed., Entry# 2068.
2. Neugebauer, J. M., Detergents: An Overview. Meth. Enzymol., **182**, 239-253 (1990).
3. Protein Purification Applications: A Practical Approach, Harris, E. L. V., and Angal, S., eds., IRL Press at Oxford University Press (New York, NY: 1990), p. 71.
4. Helenius, A., and Simons, K., Solubilization of Membranes by Detergents. Biochim. Biophys. Acta., **415(1)**, 29-79 (1975).
5. Fluka Biochemika 1989 Handbook, p. 557.
6. Data for Biochemical Research, 3rd ed., Dawson, R. M. C., et al., Oxford University Press (New York, NY: 1986), p. 287.
7. Murray, M. G., and Thompson, W. F., Rapid Isolation of High Molecular Weight Plant DNA. Nucleic Acids Res., **8(19)**, 4321-4325 (1980).
8. Short Protocols in Molecular Biology, 3rd ed., Ausubel, F. M., et al., Wiley (New York, NY: 1995), pp. 2-10.
9. Dempster, E. L., et al., Rapid DNA Extraction from Ferns for PCR-based Analyses. Biotechniques, **27(1)**, 66-68 (1999).
10. Gustincich, S., et al., A Fast Method for High-quality Genomic DNA Extraction from Whole Human Blood. Biotechniques, **11(3)**, 298-302 (1991).
11. Morimoto H., et al., Spectrophotometric Analysis of RNA and DNA Using Cetyltrimethylammonium bromide. Anal. Biochem., **62(2)**, 436-448 (1974).
12. Isomaa, B., and Hagerstrand, H., ConA-mediated Agglutination in Rat T-lymphocytes is Enhanced by the Membrane-perturbing Agent CTAB. Cell Mol. Biol., **32(5)**, 627-630 (1986).

13. Panyim, S., et al., A Simplified Gel Electrophoretic System and Its Validity for Molecular Weight Determinations of Protein-cetyltrimethylammonium Complexes. Anal. Biochem., **81(2),** 320-327 (1977).
14. Akins, R. E., et al., Cetyltrimethylammonium Bromide Discontinuous Gel Electrophoresis: Mr-based Separation of Proteins with Retention of Enzymatic Activity. Anal. Biochem., **202(1)**, 172-178 (1992).
15. Samsonoff, C., et al., The Use of Coomassie Brilliant Blue for Critical Micelle Concentration Determinatio of Detergents. J. Colloid Interface Sci.,**109(2)**, 325-329 (1986).
16. Selig, W., A Titrant for Perchlorate: Cetyltrimethylammonium Bromide. Talanta, **26**, 1061-1064 (1979).
17. Januszkiewicz, K. R., and Alper, H., Exceedingly Mild, Selective and Stereospecific Phase-Transfer-Catalyzed Hydrogenation of Arenes. Organometallics, **2**, 1055-1057 (1983).

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