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ProductInformation

Thymine

Product Number **T0376**
Store at Room Temperature

Replacement for Product Number 13,199-7

Product Description

Molecular Formula: $C_5H_6N_2O_2$
Molecular Weight: 126.1
CAS Number: 65-71-4
pK_a: 9.94 (25 °C)[1]
λ_{max}: 205 nm, 264.5 nm (pH 7.0)[1]
Extinction Coefficient (pH 7.0): E^{mM} = 9.5 (205 nm), 7.9 (264.5 nm)[1]
Synonyms: 5-methyl-2,4(1H,3H)-pyrimidinedione; 5-methyluracil; 2,4-dihydroxy-5-methylpyrimidine

Thymine is a pyrimidine derivative that is a constituent of DNA in its nucleotide form thymidylate (deoxytymidylate, or dTMP). The biosynthesis of thymidylate occurs via the transfer of a methylene group from methylene tetrahydrofolate to deoxyuridylate by thymidylate synthase and subsequent reduction of the methylene group to a methyl group. Thymine is itself converted to thymidylate in two steps: (a) conversion to thymidine by thymidine phosphorylase, and (b) phosphorylation of thymidine by thymidine kinase.[2] Thymine is metabolized to β-aminoisobutyrate via dihydrothymine and β-ureidoisobutyrate.[3]

A growth medium for *Lactobacillus johnsonii* that includes thymine has been reported.[4] Cultures of auxotrophic mutants of *Shigella flexneri* have been grown in M9 media with 50 µg/ml thymine.[5] Mutant straints of Streptococcus mutans have been cultured in CMM medium supplemented with 20 µg/ml thymine.[6]

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in 1 M NaOH (50 mg/ml), with heat as needed, yielding a clear to slightly hazy, colorless to faint yellow solution.

References

1. The Merck Index, 12th ed., Entry# 9539.
2. DNA Replication, 2nd ed., Kornberg, A., and Baker, T. A., W. H. Freeman and Co. (New York, NY: 1992), pp. 75-77, 85-87.
3. Textbook of Biochemistry with Clinical Correlations, 5th ed., Devlin, T. M., ed., Wiley-Liss (New York, NY: 2002), pp. 846-848.
4. Elli, M., et al., Iron requirement of *Lactobacillus spp.* in completely chemically defined growth media. J. Appl. Microbiol., 88(4), 695-703 (2000).
5. Cersini, A., et al., Intracellular multiplication and virulence of *Shigella flexneri* auxotrophic mutants. Infect. Immun., **66(2)**, 549-557 (1998).
6. Crowley, P. J., et al., Genetic and physiologic analysis of a formyl-tetrahydrofolate synthetase mutant of *Streptococcus mutans*. J. Bacteriol., **179(5)**, 1563-1572 (1997).

GCY/NSB 12/05