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ProductInformation

(+,-)-THIOPENTAL SODIUM/SODIUM CARBONATE
DEA SCHEDULE III
Product Number **T6023**

CAS #: 71-73-8
Synonyms for Thiopental (free acid): 5-Ethyl-5-(1-methylbutyl)-2-thiobarbituric acid; Pentothal; Penthiobarbital; Thionembutal; Thiopentone

Product Description

Appearance: Light yellow powder with a garlic-like odor
Molecular formula: $C_{11}H_{17}N_2O_2SNa$
Formula weight: 264.3
Dissociation Constant: pKa = 7.6 at 20°C

The name thiopental sodium has been used to describe preparations of both thiopental sodium alone or physical mixtures of thiopental sodium and sodium carbonate (buffer salt).[1] This product (T6023) is a mixture of approximately 100 parts sodium thiopental and 6 parts sodium carbonate. Sodium thiopental is a barbiturate used as a short-term intravenous anesthetic. It was first introduced for surgical use in 1935 by Lundy.[6] The anesthetic effect is due to initial distribution of the material to the brain. Thiopental will then redistribute to other tissues, primarily body fat.[1,4,6] The barbiturate significantly binds to plasma proteins and it is metabolized by the liver, where the major pathway appears to be side-chain oxidation.[4,6] Anesthetic IV doses for animal research fall in the range of 20-30 mg/kg depending on the species.[7] Several references to analytical procedures have been published.[2,4,5]

Preparation Instructions

Sigma tests the solubility of this mixture at 50 mg/ml in water and obtains a clear, faint yellow to yellow-green solution. Solutions are alkaline (a pH range of 10.2-11.2 for a 8% solution) and decompose upon standing.[3] A 2.5% solution in water was stable for at least 10 days at 25°C.[4] Upon boiling a precipitate will form.[2] Dispose of solutions if they become cloudy or a precipitate forms.[4] In an acidic solution, the material will convert to the free acid which is water insoluble and will precipitate.[1,4] Buffers containing Ca^{2+} or Mg^{2+} should be avoided due to formation of insoluble carbonate salts, as well as work with amine salts that liberate the free base in alkaline solutions.[4]

Storage/Stability

The powdered product is hygroscopic. It should be stored desiccated at room temperature.

References

1. Martindale: The Extra Pharmacopoeia, 31th ed., p. 1265.
2. United States Pharmacopeia.
3. Merck Index, 12th ed., #9487 (1996).
4. McLeish, M.J., Anal. Prof. Drug. Subst. Excip., 21, 535-572 (1992).
5. Clarkes Isolation and Identification of Drugs, p. 1017.
6. Goodman and Gilman's, The Pharmacological Basis of Therapeutics, Eighth edition, p. 301.
7. Drug Dosage in Laboratory Animals, A Handbook, 3rd Ed., p. 471.

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