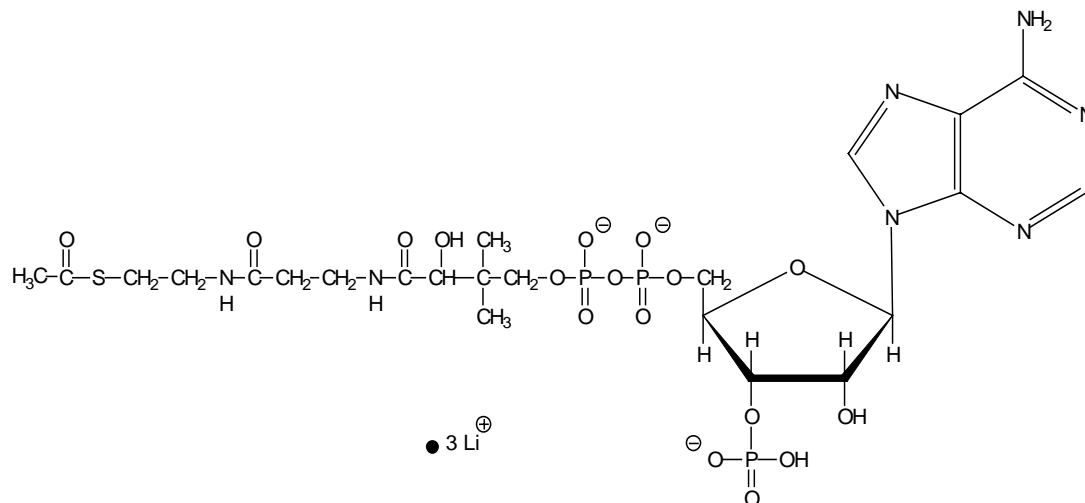


ACETYL COENZYME A (C2:0) LITHIUM
Sigma Prod. No. A-2181

Product Information



CAS NUMBER: 75520-41-1

SYNONYMS: Acetyl CoA Lithium; Acetyl-S-CoA Lithium

PHYSICAL PROPERTIES:

Appearance: White powder

Molecular Formula: $C_{23}H_{38}N_7O_{17}P_3S$ (for free acid)

Molecular Weight: 809.6 (for free acid)

$E^M(260nm) = 16,400$ (water)¹

$E^M(259nm) = 15,400$ (0.1 M PO_4 Buffer, pH 7)

$E^M(232nm) = 8,700$ (water)¹

METHOD OF PREPARATION:

A-2181 is prepared enzymatically by reacting Coenzyme A with Acetyl Phosphate and Phosphotransacetylase. The product is purified by ion exchange chromatography. Several methods of preparation and methods for the determination of Acetyl CoA and other CoA derivatives have been described in the literature.^{3,4,5}

STABILITY / STORAGE AS SUPPLIED:

This moisture-sensitive powder should be stored desiccated at $-20^\circ C$.

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SOLUBILITY / SOLUTION STABILITY:

Sigma tests the solubility of A-2181 in deionized water at 100 mg/mL and obtains clear and colorless solutions. Acetyl CoA is generally stable in neutral and moderately acidic solutions, even at elevated temperatures, at least for a short time; aqueous solutions at pH 3.5-5 can be heated to 100 °C without decomposition.¹

Acetyl CoA hydrolyzes in strong acid, and hydrolyzes more rapidly in alkaline solutions. Aqueous solutions stored in aliquots at -20 °C are stable for no longer than 2 weeks.² Solutions stored at -80 °C have been reported to be stable for 6 months.⁶

PRODUCT DESCRIPTION / USAGE:

Coenzymes comprise a class of molecules, generally derived from vitamins, which function catalytically in enzyme systems.⁷ The acetic acid moiety which is bound by a high-energy bond (free energy 34.3 kJ/mol) to the -SH group of Coenzyme A is a precursor to fatty acids, steroids and other naturally occurring compounds, such as terpenes and acetogenins present in plants.^{8,9} The biosynthetic pathways for Acetyl CoA have been illustrated.⁸

In the transfer reaction by Acetyl CoA of the C₂ acetyl fragment, either the carboxyl group or the methyl group may react (electrophilic vs. nucleophilic reaction, respectively).⁹

REFERENCES:

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