

Technical Data Sheet

Coenzym A trilithium salt dihydrate

for biochemistry

Order number: 2100

Coenzyme A (CoA; CoA-SH) is an essential cofactor for the activation of alkyl acids in the metabolism of all living organisms. In both prokaryotic and eukaryotic organisms, coenzyme A is built up in a universal five-step pathway from pantothenic acid, ATP, and cysteine.

Responsible for the biological activity of CoA is its nucleophilic thiol group (derived from cysteine), which forms thioester bonds with the carboxylic acid groups of alkane and fatty acids. The metabolically active forms of CoA are acyl-CoA and acetyl-CoA.

In **Acetyl-CoA**, an acetate residue (CH_3CO) is bound to the sulfur atom of the CoA. Thus, an "activated" acetate residue is obtained. This acetate residue is completely degraded in the citrate cycle and respiratory chain (resulting in CO_2 and H_2O) or is used as a building block for the synthesis of energy-rich compounds such as fatty acids, triglycerides, ketone bodies or cholesterol. Acetyl-CoA is mainly formed by the oxidative decarboxylation of pyruvate in the process of glycolysis and in the β -oxidation of fatty acid degradation.

Also found in fatty acid metabolism is **Acyl-CoA**. Analogous to Acetyl-CoA, Acyl-CoA is an "activated" fatty acid: the fatty acid residue (acyl residue: RCO) is linked to the thiol group of the CoA.

Applications

Since Coenzyme A is a central component of many important metabolic pathways in bacteria, fungi and animals, it is used in biochemical assays. Coenzyme A is also used as a component in some (chemically defined) cell culture media.

Coenzyme A trilithium salt is soluble up to 50mg/ml in water. A stock solution is prepared in distilled water or buffer. Heat and/or sonication may be necessary to dissolve the product. The aqueous solution should be used within 1 day or stored in aliquots at -20°C for some months.

Storage and Stability

Coenzym A powder is stored at -20°C . Shipment may be at room temperature.

The free acid is less stable than the trilithium salt, and up to 5% decomposition may occur within 6 months at -20°C . Aqueous solutions of coenzyme A are unstable at basic pH and should be stored frozen in aliquots with a pH of 2-6.

CoA disulfides form in contact with atmospheric oxygen. These can be converted back into free CoA with reducing agents such as dithiothreitol or 2-mercaptoethanol.

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