



Product Information

Oxaloacetic acid

Product Number **O 4126**
Storage Temperature -0 °C

Product Description

Molecular Formula: C₄H₄O₅
Molecular Weight: 132.1
CAS Number: 328-42-7
Melting Point: 152 °C (cis enol form),
184 °C (trans enol form)¹
pK_A: 2.22 (pK₁) and 3.89 (pK₂), 13.03 (enolic OH)²

Synonyms: oxalacetic acid, oxobutanedioic acid,
2-oxosuccinic acid, ketosuccinic acid.¹

Oxaloacetic acid is a dicarboxylic acid that is a substrate for the enzymes malate dehydrogenase and oxalacetate decarboxylase when the oxaloacetic acid is in its anionic form oxaloacetate.^{3,4} *In vivo*, oxaloacetate is formed in plants in mesophyll cells via the condensation of CO₂ with phosphoenolpyruvate. In the citric acid cycle in the mitochondria of eukaryotes, oxaloacetate undergoes condensation with an acetyl group from acetyl CoA to produce citrate. Oxaloacetate is regenerated via the oxidation of succinate to fumarate, which in turn is hydrated to malate, which is finally oxidized to give oxaloacetate.⁵

Fumarase A from *Escherichia coli* has been shown to catalyze the isomerization of oxaloacetic acid from the enol form to the keto form.⁶ Oxaloacetate in cell culture media has been shown to induce proliferation of primary cultured rat hepatocytes.⁷ A study of calcium retention by mitochondria with respect to oxidation of mitochondrial pyridine nucleotides has been reported.⁸

Oxaloacetic acid has been used in the design of a synthetic scheme for the nonamide compound CP-225,917.⁹ The synthesis and NMR spectroscopy of several stereoisomeric diacetamido derivatives of oxaloacetic acid and 5,7-diamino-3,5,7,9-tetraoxynon-2-ulosonic acids has been described.¹⁰

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in water (100 mg/ml), with heat as needed, giving a clear to very slightly hazy, faint yellow solution.

Storage/Stability

In general, stock solutions of this product may be prepared daily in water (10 mM) and kept on ice, since oxalacetic acid decarboxylates in solution to form pyruvate and is therefore unstable.

References

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8. Prpic, V., and Bygrave, F. L., On the inter-relationship between glucagon action, the oxidation-reduction state of pyridine nucleotides, and calcium retention by rat liver mitochondria. *J. Biol. Chem.*, **255(13)**, 6193-6199 (1980).

9. Sulikowski, G. A., et al., Investigations into a biomimetic approach toward CP-225,917 and CP-263,114. *J. Org. Chem.*, **65(2)**, 337-342 (2000).
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