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Product Information

Cytochrome c Oxidase
from bovine heart

Catalog Number **C5499**
Storage Temperature –20 °C

EC 1.9.3.1
CAS RN 9001-16-5
Synonyms: Complex IV, Ferrocytochrome-c:oxygen oxidoreductase

Product Description

Cytochrome c oxidase is the principal terminal oxidase of high oxygen affinity in the aerobic metabolism of all animals, plants, yeasts, and some bacteria.[1] It is present in the mitochondria of the more highly developed cells and in the cytoplasmic membrane of bacteria. Cytochrome c oxidase catalyzes the electron transfer from cytochrome c to O_2. This electron-transfer process produces a proton gradient across the membrane, which in turn drives the production of ATP. This enzyme is unique in providing energy for the cell by coupling the electron transport through the cytochrome chain with the process of oxidative phosphorylation.[2]

The cytochrome c oxidase complex consists of 7–13 different proteins and is isolated as a dimer of 250 kDa of which heme a is an integral part.[3-5]

This product consists of the macromolecular complex IV associated with micelles of the detergent *n*-dodecyl β-D-maltoside. It is supplied as a solution in 25 mM Tris-HCl buffer, pH 7.8, with 5 mM EDTA and 39 mM *n*-dodecyl β-D-maltoside.

The bovine heart enzyme solubilized with *n*-dodecyl β-D-maltoside has an apparent molecular mass of 300–350 kDa (gel filtration).[6]

Specific activity: ≥20 units/mg-protein

Unit definition: One unit of cytochrome c oxidase will oxidize 1.0 μmole of ferrocytochrome c per minute at 25 °C at pH 6.0.

The measurement of the enzyme activity is based on the change in the absorption of cytochrome c at 550 nm due to the change in its oxidation state.[7] The extinction coefficient used for oxidized cytochrome c is 21.84.[8] The cytochrome c is first reduced with dithiothreitol and then reoxidized by the enzyme. This product is optimally assayed in 75 mM potassium phosphate buffer, pH 6.0, containing 0.5 mM *n*-dodecyl β-D-maltoside at 25 °C in the presence of 9 μM reduced cytochrome c.

Storage/Stability

Store the product at –20 °C. The product remains stable for at least 2 years as supplied.

Avoid repeated freeze-thaw cycles. After initial thawing, it is recommended to refreeze in aliquots at –20 °C. The enzyme may be kept for up to 2 weeks at 2–8 °C.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

References

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