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ProductInformation

Xanthine Oxidase
from bovine milk

Product Number **X 4376**
Storage Temperature 2-8 °C

Product Description

Enzyme Commission (EC) Number: 1.1.3.22
CAS Number: 9002-17-9
Molecular Weight: 283 kDa[1]
Extinction Coefficient: $E^{1\%}$ = 11.7
Synonyms: Xanthine:oxygen oxidoreductase, XOD

Xanthine oxidase from buttermilk is a homodimer consisting of two equal subunits of 140 kDa. Each subunit contains one mole of FAD, one atom of Mo, and four iron atoms. The enzyme catalyzes the following reaction:

$$\text{Xanthine} + H_2O + O_2 \rightarrow \text{Uric Acid} + H_2O_2$$

Hypoxanthine, purine, acetaldehyde, salicylaldehyde, and benzaldehyde may also be utilized as substrates. Reported K_M values are xanthine (1.7 mM), hypoxanthine (1.3 mM), and salicylaldehyde (1.1 mM).[2]

Xanthine oxidase is inhibited by acacetin, allopurinol, ellagic acid, 4-hydroxybenzaldehyde, 3-methyl-quercitin, persicarin and luteolin.[3]

Under some reaction conditions, the product of the reaction catalyzed by xanthine oxidase is the superoxide radical $O_2\cdot^-$ rather than hydrogen peroxide. As such, xanthine oxidase can be used to generate superoxide radicals for use in the enzymatic assay of superoxide dismutase.[4] The addition of xanthine oxidase as a superoxide donor to hepatic stellate cells (HSC) cell cultures strongly increased procollagen I synthesis.[5]

Precautions and Disclaimer

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

Preparation Instructions

This enzyme is soluble in 50 mM potassium phosphate buffer (1 mg/ml), yielding a clear solution.

References

1. Bray, R. C., in The Enzymes, 3rd ed., vol. XII, pt. B, Academic Press (New York, NY: 1975), pp. 303-388.
2. Methods of Enzymatic Analysis, 2nd ed., vol. 1, Bergmeyer, H. U., ed., Academic Press (New York, NY: 1974), pp. 521-522.
3. Zollner, H., Handbook of Enzyme Inhibitors, 2nd ed., pt. A, VCH (Weinheim, Federal republic of Germany: 1993), pp. 517-519.
4. McCord, J. M., and Fridovich, I., Superoxide dismutase. An enzymic function for erythrocuprein (hemocuprein). J. Biol. Chem., **244(22)**, 6049-6055 (1969).
5. Casini, A, et al., Neutophil derived superoxide anion induces lipid peroxidation and stimulates collagen synthesis in human hepatic stellate cells: role of niotric oxide. Hepatology, **25(2)**, 361-367 (1997).

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