Superoxide Dismutase from bovine erythrocytes

Catalog Number : S36430

CAS Number : 9054-89-1

Molecular Weight: 32.5 kDa

Storage: -20 ℃

Product Description

SOD from bovine erythrocytes was the first SOD to be found in mammalian tissues. Before its enzymatic activity was discovered the protein was known as haemocuprein or erythrocuprein.

Superoxide Dismutase (SOD) catalyzes the conversion of superoxide radicals into hydrogen peroxide and molecular oxygen.

$2\ O_2^- + 2\ H^+ \rightarrow O_2 + H_2O$

SOD from bovine erythrocytes is a homodimeric non-covalently bound protein with two 16.3kDa subunits of 151 amino acids. Each monomer has one intrachain disulfide and one free sulfhydryl, one Cu^{2+} atom and one Zn^{2+} atom.

There are three forms of SOD differentiated by the metal ions in the active site. These are Cu^{2+}/Zn^{2+}, Mn^{2+}, and Fe^{2+} SOD. In vertebrate organisms Cu/Zn-SOD is found in the cytoplasm and the mitochondrial intermembrane space, while Mn-SOD is found in the mitochondrial matrix space. Fe-SOD is found in prokaryotes and some higher plants.

Extinction coefficient: E^{mM}= 10.3 (258 nm) SOD has no significant absorbance peak at 280 nm because of the absence of tryptophan.

pH optimum: 7.8 pH range: 7.6–10.5

Temperature optimum: 25 ℃

Isoelectric point: 4.95

Inhibitors: cyanide, OH^- (competitive), hydrogen peroxide

This product is highly purified from bovine erythrocytes. It is supplied as a blue-green lyophilized powder containing potassium phosphate buffer salts.

Specific activity: ≥3,000 units/mg protein

Unit Definition:

One unit will inhibit the rate of reduction of cytochrome C by 50% in a coupled system, using xanthine and xanthine oxidase, at pH 7.8 at 25 ℃ in a 3.0 ml reaction volume. The xanthine oxidase concentration should produce an initial (uninhibited) ⊿A550 of 0.025 ±0.005 per minute.

SOD is assayed spectrophotometrically in a 3.00ml reaction mix. The final concentrations are 50 mM potassium phosphate, 0.1 mM EDTA, 0.01 mM cytochrome c, 0.05 mM xanthine, 0.005 unit of xanthine oxidase, and 1unit of superoxide dismutase at pH 7.8 at 25 ℃.

Preparation Instructions

SOD is soluble in water (20 mg/ml) yielding a colorless to blue-green solution. SOD is also soluble in aqueous buffers such as 0.1 M potassium phosphate, pH 7.5.

Storage/Stability

Store the product at –20 ℃. When stored at –20 ℃, SOD remains active for at least two years. A solution of SOD in 0.1 M potassium phosphate, pH7.5 shows no loss of activity after one hour at 60 ℃, after six hours at room temperature, or at least two days at 4 ℃. For long term storage, store in aliquots at −20 ℃.

Precautions and Disclaimer

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