Tribioscience

Lactoperoxidase, Enzyme Activity

Catalog	Unit
TBP0075-1MG	1 mg
TBP0075-5MG	5 mg

Product Details

Form: Freeze-dried

Solubility: Soluble in distilled water or dilute buffer

Stability: -20° C; -4° F

Activity: 200 U/mg protein

Protein: 200 U/mg protein

A415/A280: > 0.9

Unit Definition

That amount of enzyme which will catalyze the formation of one micromole of triiodide per minute at 25°C, pH 7.0 in 0.033 M sodium phosphate buffer.

Assay Method

The reaction velocity of the LPO-catalyzed reaction is directly proportional to the increase in absorbance at 350 nm resulting from the formation of triiodide.

Applications

Lactoperoxidase (LPO) (EC 1.11.1.8) is a hemin containing enzyme. It catalyzes the hydrogen peroxide oxidation of iodide as shown below:

$$2I^- + H_2O_2 + 2H^+ \xrightarrow{LPO} I_2 + 2H_2O$$

The enzyme also catalyzes the oxidation of phenols and aromatics in the presence of hydrogen peroxide. Bovine milk is usually used as a source for isolation and purification of LPO. However, the enzyme is also present in the milk of other species and in the secretions of other mammalian glands such as the salivary gland. LPO from bovine milk has a molecular weight of 77,500. It is a glycoprotein and may exist in two isoenzyme forms.

LPO can be used for radioiodination of proteins by coupling the enzyme to cyanogen bromide-activated Sepharose-4B. This coupled form of LPO was capable of iodinating all proteins studied and it exhibited activity over a wide range of experimental conditions.

Reagents

1. 0.033 M Sodium phosphate buffer, pH 7.
2. 0.005 M Potassium iodide in phosphate buffer.
3. 0.09 M Hydrogen peroxide. Dilute 0.1 ml hydrogen peroxide (30% H2O2 reagent grade) to 10 ml with distilled water.
4. Lactoperoxidase solution. Prepare stock enzyme solution (1 mg/ml) in phosphate buffer. Immediately prior to use, prepare a dilution in the range of 0.5-1.0 U/ml in phosphate buffer.

Calculation

$$\text{Activity (U/mg)} = \frac{(\Delta E_{350nm/min})(\text{Total Vol.})(\text{Enz. Diln.})}{(26)(\text{Enz. Vol.})(\text{mg Enz./ml})}$$

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