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TECHNICAL INFORMATION

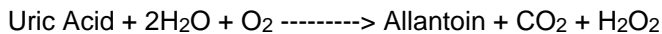
Catalog Number: 101202, 101203, 191498

Uricase

CAS #: 9002-12-4

Unit Definition: 1 unit oxidizes 1 umole of uric acid/minute at pH 8.5, 25°C.

Description: Uricase, or urate oxidase, is a copper-containing enzyme catalyzing specifically the oxidation of uric acid. It catalyzes the reaction of uric acid in accordance with the following reaction:



Uricase is found in the kidneys, livers and spleens of almost all mammals, except in human beings and anthropoidea. It is also known that uricase exists in various kinds of bacteria.

Optimum pH: Activation maximum at pH 8.5. Activity is scarcely observed at pH below 5.0 or over 11.0. Stable within the pH range of 7.0 to 11.0

Optimum Temperature: Optimum temperature for activity is approximately 40°C.

Inhibition: Metallic iron carriers as Cu^{++} potentially reduce or inhibit the activity. The enzyme activity is inhibited by cyanide ion.

Stabilizing Agents: Chelate compounds such as EDTA work as a potential stabilizing agent for uricase.

Assay

Method: The disappearance of uric acid is followed spectrophotometrically at 290 μm .³ Allantoin shows no absorption at this wave length.

Reagents

Enzyme: 1 mg/ml in 0.1 M borate buffer, pH 8.5

Substrate: 20 mg of uric acid (MP # 103215) per liter of water. (Warm to dissolve; make up on the day used.) For use, dilute with an equal volume of 0.2 M borate buffer, pH 8.5

Procedure:

To control cuvette add the following in order:

Enzyme	0.5 ml
0.1% KCN	0.2 ml
Water	0.3 ml
Substrate	2.0 ml

With spectrophotometer at 290 μm adjust optical density to 0.500. To test cuvette add:

Substrate	2.0 ml
Water	0.5 ml
Enzyme at zero time	0.5 ml

Absorbancy readings are taken every minute for 6 or 7 minutes and the rate of absorbancy decrease per minute is determined.

Calculation: The molar absorbancy index of uric acid is $1.22 \times 10^4 \text{ cm}^{-1}$.

$$\text{units/mg weight} = \frac{\Delta A/\text{min} \times 1000}{1.22 \times 10^4 \times \text{mg/ml reaction mixture}}$$

Assay of purified uricase suspension is the same except that the enzyme, diluted approximately 1 to 200, can be omitted from the blank, hence KCN inactivation is unnecessary.

$$\text{units/ml} = \frac{\Delta A/\text{min} \times 1000 \times 3 \text{ (ml)} \times \text{dilution factor}}{1.22 \times 10^4 \times 0.5 \text{ (ml)}}$$

Availability:

Catalog Number	Description	Size
101202	Uricase, from beef kidney, activity approximately 4.5 units/gm	1 U 3 U 5 U 25 U 100 U
101203	Uricase, from <i>Candida utilis</i> , activity not less than 3 units/mg protein	5 U 10 U 25 U 50 U 100 U
191498	Uricase, from <i>Bacillus</i> sp., activity approximately 4 units/mg solid	5 U 10 U 25 U 50 U

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- *Merck Index 12th Ed* No10015