Tribioscience

# Mutarotase, Enzyme Activity

| Catalog | Unit |
|---|---|
| TBP0081-1KU | 1 KU |
| TBP0081-5KU | 5 KU |

## Product Details

Form: Ammonium Sulfate

Solubility: Soluble in distilled water or dilute buffer

Stability: Stable when stored at 4°C. Do not freeze

Activity: 5,000 U/mg protein

Protein: 10 mg/ml

Catalog No.: 136B5000

## Unit Definition

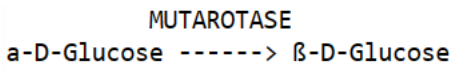
That amount of enzyme which will increase the spontaneous mutarotation of one micromole of a-D-Glucose to §-D-Glucose per minute at pH 7.4 and 25°C. One rotation unit is equal to 0.04 U when measured with Glucose dehydrogenase.

## Assay Method

The rate at which the spontaneous mutarotation of a-D-Glucose is increased at 25°C at pH 7.4 in the presence of mutarotase as measured by a precision polarimeter.

## Applications

Mutarotase (EC 5.1.3.3) catalyzes the mutarotation of a-D-Glucose to ß-D-Glucose as shown in the following reaction:




Mutarotase, which catalyzes the mutarotation of certain sugars was discovered by accident in 1949. Keston reported the occurrence of an enzyme of similar characteristics in animal tissues such as rat liver and kidneys of porcine, rabbit, chicken, rat, bovine and lamb. Later, Keston reported partial purification by adsorption with phosphate gel and chloroform treatment. He has also considered the kinetics and distribution of mutarotases of various animals and their possible relation to sugar transport. A controversial question concerning the postulated inhibition of kidney mutarotase by its own substrate, glucose, has been resolved.

## Reagents

1. 5.0 mM sodium EDTA, pH 7.4.
2. Enzyme Solution. Freshly prepared (just before use) enzyme solution in reagent (1) containing approximately 200 units per ml.

## Calculation

A=Initial rotation from Spontaneous Rotation graph.
B=Rotation per 5.0 minutes from graph 2.
C=Blank rotation per 5.0 minutes, C = A-B.
D=Conversion of C to micromoles a-D-Glucose from standard curve graph.
E=555 micromole a-D-Glucose at initial rotation.
F=Spontaneous rate in micromoles/minute. F = E-D/5.0 minutes.
G=Test rotation per 5.0 minute from test graph.
H=Test rotation after 5.0 minute, H = A-G.
I=Conversion of H to micromoles from standard curve.
J=Test rate in micromoles per minute. J = (E-I)/5.0 minutes - F

$$\text{Units/mg Protein} = \frac{J}{(\text{mg Protein}/10.0\ \text{ml Reaction mixture})}$$

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