

Glutamate dehydrogenase (NAD(P)-dependent)

Catalog	Unit
TBP0251-1KU	1000 U
TBP0251-5KU	5000 U

Product Details

Form: Freeze-dried powder

Solubility: Distilled water or dilute buffer

Stability: Store at -20° C (-4° F)

Activity: 10-50 U/mg

Protein: 90-95%

Unit Definition

The amount of enzyme which catalyzes the conversion of one micromole of α-ketoglutarate to L-glutamate per minute at 25°C and pH 7.5 without ADP.

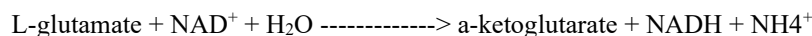
Assay Method

The rate of decrease in the absorbancy at 340 nm, resulting from the oxidation of NADH in the presence of α-ketoglutarate and ammonium ions with no added ADP, is proportional to the catalytic activity of glutamate dehydrogenase. Note: It has been reported that the addition of ADP to assay system causes a three-fold increase in glutamate dehydrogenase activity.

Applications

Glutamate dehydrogenase (GLDH) (L-Glutamate:NAD(P)⁺ Oxidoreductase; EC 1.4.1.3) catalyzes the following reaction:

GLDH



The enzyme can also use NADP⁺ as electron acceptor. Glutamate dehydrogenase plays a significant role in deamination of amino acids especially in those organisms that excrete ammonia. Glutamate dehydrogenase from rat and beef liver has been extensively studied. The enzyme from beef liver has a molecular weight of 280,000. The reaction catalyzed by glutamate dehydrogenase can be used clinically in determination of ammonia and products which can be converted to ammonia in body fluids such as blood urea nitrogen (BUN) determination. This enzyme can also be utilized in the assay of GOT and GPT.

Reagents

1. 0.1 M Sodium phosphate buffer, pH 7.5.
2. 0.005 M α-ketoglutarate, monosodium salt, (2.184 g/100 ml). Prepare in phosphate buffer, fresh daily.
3. 0.004 M NADH-disodium salt (2.5 mg/ml). Prepare in 0.001 M sodium carbonate, fresh daily.
4. 3.0 M Ammonium chloride in phosphate buffer.
5. 0.0025 M EDTA-disodium salt in distilled water, (93 mg/100 ml).
6. Glutamate dehydrogenase (enzyme) solution. Dilute in phosphate buffer to a final concentration of 0.1-0.2 U/ml. Must be prepared fresh prior to assay.

Calculation

$$\text{Activity (U/mg)} = \frac{(\Delta E_{340\text{nm}/\text{min}})(\text{Total Vol.})(\text{Enz. Diln.})}{(6.22)(\text{Enz. Vol.})(\text{mg Enz./ml})}$$

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