Tribioscience

L-Arginase, Enzyme Activity

Catalog	Unit
TBP0073-1KU	1000 U
TBP0073-5KU	5000 U

Product Details

Form: Freeze-dried

Solubility: Soluble in water

Stability: -20° C; -4° F

Activity: 100 U/mg protein

Protein: 95%

Unit Definition

One unit of enzyme activity is defined as that amount of enzyme that causes the hydrolysis of one micromole of L-arginine per minute at 37°C and pH 9.5.

Applications

L-Arginase causes the following reaction:

$$\text{L-arginine} + H_2O \xrightarrow{\text{L-Arginase}} \text{L-ornithine} + \text{urea}$$

The quarternary structure of native rat liver arginase has been described by Hirsch-Kolb, H & Greenberg, D.M.," Molecular characterisitics of rat liver arginase". EDTA treatment dissociated the enzyme into inactive subunits of 30,000 daltons each. Addition of Mn2+ ions restored the activity and caused reassociation of subunits to the natve form of 120,000 daltons.

Reagents

1. 0.2 M L-arginine solution: 1.05 g L-arginine monochloride/25 ml, adjusted to pH 9.5 with 1 N NaOH.
2. 12.5 mM Urea standard sol'n. (75 mg urea/100 ml)
3. 0.084 N Sulfuric acid (2.32 ml conc. H2SO4/1000 ml)
4. 0.3 M Sodium tungstate, pH 7.0: 10 g Na2WO4●2H2O/100 ml, pH adjusted to 7.0 with 1 N H2SO4
5. 0.03 M Tungstic acid solution: Mix 9 parts H2SO4 (3) with 1 part sodium tungstate solution (4). Prepare fresh prior to assay.
6. 60% (v/v) Phosphoric acid (60 ml conc. H3PO4, approx. 85-87%/100 ml).
7. 60 mM Diacetylmonoxime/3.3 mM thiosemicarbazide reagent: Mix 600 mg diacetylmonoxime + thiosemicarbazide/100ml. Mix 10 parts H3PO4 (6) with 2 parts solution immediately prior to assay.
8. 10 mM Manganese-maleate buffer: 10 mM Mn2+, 10 mM maleate (116 mg maleic acid anhydride/100 ml,, adjusted to pH 9.7 with 0.1 N NaOH; add 0.5 ml 2 M MnSO4 solution and adjust to pH 7.5 with 0.1 M H2SO4.
9. L-Arginase: 1 mg /ml solution in 10 mM Manganese-maleate buffer (8) diluted to 1:500 dilution.

Calculation

$$\text{Activity (U/mg)} = \frac{(\Delta E_{546nm/min})(2.5)}{(\Delta E_{546nm/min})(30)(0.1)(\text{mg Enz./ml})}$$

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