

## Pepsin, Enzyme Activity

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Catalog	Unit
TBP0082-500MG	500 mg
TBP0082-2.5G	2.5 g

### Product Details

Form: Freeze-dried

Solubility: Soluble in distilled water or dilute buffer

Stability: -20° C; -4° F

Activity: 3000 U/mg

Protein: 95%

### Unit Definition

The amount of enzyme which renders TCA soluble 0.001 E280 nm per minute at 37°C, using a denatured hemoglobin substrate.

### Assay Method

Pepsin cleaves peptides from hemoglobin which are soluble in trichloroacetic acid (TCA). The tyrosine and tryptophan content of these TCA-soluble peptides is determined by the measurement of the extinction at 280 nm.

### Applications

Pepsin (3.4.23.1) is the principal proteolytic enzyme which occurs in the gastric juices of all mammals. Pepsinogen, its precursor, is secreted by the stomach mucosa. Activation of pepsinogen to pepsin is facilitated by the hydrogen ion concentration of the gastric juice, and it is accomplished autocatalytically by pepsin.

Pepsin is an endopeptidase, which preferentially hydrolyzes those peptide linkages which involve the amino group contributed by the aromatic amino acids phenylalanine, tyrosine and tryptophan. Although pepsin digests proteins mainly into polypeptides of varying length, some shorter peptides and even some free amino acids, notably tyrosine and phenylalanine, may be released. The optimum pH for pepsin activity varies from 1.5-2.0 depending on the substrate. Pepsin from porcine stomach mucosa has been studied most extensively and has a molecular weight of 35,000.

### Reagents

1. 1.0 N HCl.
2. 0.3 N HCl.
3. 0.01 N HCl.
4. 2.0% (w/v) Hemoglobin.
5. 5% (w/v) Trichloroacetic acid (TCA).
6. Pepsin (enzyme) solution. Dissolve to a concentration of 0.5 mg/ml in 0.01 N HCl. Just prior to assay dilute further in 0.01 N HCl to a concentration of 5-20 micrograms per ml.

### Calculation

$$\text{Activity (U/mg)} = \frac{(\Delta E_{280\text{nm}/\text{min}})(\text{Total Vol.})(\text{Enz. Diln.})}{(6.58)(\text{Enz. Vol.})(\text{mg Enz./ml})}$$

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