

Product Specification Sheet

Cat. CPP15-N-100

Carica papaya Papain (>10 U/ml)

Size: □ 100 mg

Papain, also known as papaya proteinase I, is a cysteine protease (EC 3.4.22.2) enzyme present in papaya (*Carica papaya*) and mountain papaya (*Vasconcellea cundinamarcensis*).

The papain precursor protein contains 345 amino acid residues,[5] and consists of a signal sequence (1-18), a propeptide (19-133) and the mature peptide (134-345). The amino acid numbers are based on the mature peptide. The protein is stabilised by three disulfide bridges. Its three-dimensional structure consists of two distinct structural domains with a cleft between them. This cleft contains the active site, which contains a catalytic diad that has been likened to the catalytic triad of chymotrypsin. The catalytic diad is made up of the amino acids - cysteine-25 (from which it gets its classification) and histidine-159. Aspartate-158 was thought to play a role analogous to the role of aspartate in the serine protease catalytic triad, but that has since then been disproved.[6] Nonetheless, it does appear to play a role.

Papain is a sulfhydryl protease from *Carica papaya* latex. It has a molecular weight of 23 kDa and an optimum pH range of 6.0-7.0. The action of papain on leucine methyl ester produces an insoluble polyleucine peptide. Papain breaks down the intercellular matrix of cartilage. Papain is activated by cysteine, sulfide, and sulfite. Stabilizing agents are EDTA, cysteine and dimercaptoethanol.

Papain breaks down tough meat fibres, and has been used for thousands of years to tenderise meat eaten in its native South America. Meat tenderisers in powder form with papain as an active component are widely sold.

An antibody digested by papain yields three fragments: two 50 kDa Fab fragments and one 50kDa Fc fragment. The papain-digested antibody is unable to promote agglutination, precipitation, opsonization, and lysis.

Source: Carica Papaya Latex

I.U.B.: 3.4.22.2

Supplied as a lyophilized powder prepared from a two times crystalline suspension, Code: PAP. To insure full activity, the enzyme should be incubated in a solution containing 1.1mM EDTA, 0.067mM mercaptoethanol and 5.5mM cysteine-HCl for 30 minutes. It is recommended that the enzyme be 0.22 micron filtered after dissolution and prior to use.

Activates to at least 15 units per mg protein

Store at 2-8°C

Notes: Papain preparations should be incubated in the activation solution before use to ensure full activity. Applications include antibody fragmentation and primary/neural cell isolation.

Unit Definition: One Unit hydrolyzes one micromole of benzoyl-L-arginine ethyl ester per minute at 25°C, pH 6.2, after activation in a solution containing 1.1 mM EDTA, 0.067 mM mercaptoethanol and 5.5 mM cysteine-HCl for 30 minutes.

References

Rawlings ND (1994) Met. Enz. 244, 461-486;
Yamamoto Y (2002) Curr Protein Pept Sci 3 (2): 231-238; Menard R (1990) Biochemistry 29 (28): 6706-13;

Related Items

800-160-CPP Carica papaya Papain ELISA kit (for measuring papain residue/contaminant in therapeutics), 96 tests

CPP15-N-100 Carica papaya Papain (>10 U/ml)

CPP16-AS-1 Carica papaya Papain-Agarose aff matrix for the purification of IgG Fab/Fc

CPP16-AS-5 Carica papaya Papain-Agarose aff matrix for the purification of IgG Fab/Fc

SP-55174-1 Papain Inhibitor [H-Gly-Gly-Tyr-Arg-OH; MW: 451.49]

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