Product Information

Papain Agarose from papaya latex

Lyophilized powder, 90-150 units/mL packed gel

P4406

Product Description

Storage Temperature: –20 °C

Papain is a cysteine protease with wide specificity.[1] Papain consists of a single polypeptide chain of 212 amino acids with a molecular mass of ~23.3 kDa,[2] containing three disulfide bridges and a sulfhydryl group required for enzyme activity. It cleaves peptide bonds of basic amino acids, leucine, or glycine. Papain also hydrolyzes esters and amides.

Aspects of cleavage specificity by papain at a peptide bond include:[3]

- At the P2 position (2 amino acid residues in the N-terminal direction from the cleavage site), preference for amino acids with hydrophobic or aromatic side chains, such as valine (Val), phenylalanine (Phe), and tyrosine (Tyr)
- At the P1’ position (the N-terminal residue at the cleavage site), the “X” in the “X-Y” peptide bond), lack of recognition of Val

Papain is commonly used in cell isolation procedures where it has proven more efficient and less destructive than other proteases on certain tissues. For example, papain has been used to isolate viable, morphologically intact, cortical neurons from postnatal rats.[4] Papain was found to significantly increase the yield of viable smooth muscle cells while not affecting cell sensitivity to stimulants.[5]

Limited papain digestion has proven useful for structural studies of enzymes and other proteins.[6-8] Papain has also been used in the enzymatic synthesis of amino acids, peptides, and other molecules.[9-12]

Papain is used routinely for the preparation of Fab fragments from IgG. Papain cleaves antibodies into two Fab fragments, which recognize the antigen specifically with their variable region, and one Fc fragment.[13] IgM may also be digested with papain, resulting in high yields of homogeneous Fab preparations.[14]

A general review of papain immobilized to different inert matrices has been published.[15]

Precautions and Disclaimer

This product is for R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Product

This papain-agarose product is sold as a lyophilized powder, with lactose present as a stabilizer.

Preparation Instructions

General instructions for re-suspension of our enzyme-agarose conjugates include the following steps.

- Suspend the lyophilized enzyme-agarose to 5-10 mg solid/mL water.
- Allow brief hydration of the lyophilized powder.
- Filter and wash the rehydrated enzyme-agarose product several times with either water or your intended buffer.
- Re-suspend the enzyme-agarose in your intended buffer. The product is now ready for use.

Storage/Stability

For re-use of our enzyme-agarose conjugates, the following steps may be used as a general guide:

- Wash the enzyme-agarose with water and/or buffer until it is free of substrates.
- For long-term storage, enzyme-agarose products may be re-converted to their dry form, as follows:
  - Wash the enzyme-agarose with the buffer of choice.
  - Drain excess buffer.
  - Dry the enzyme-agarose in a vacuum desiccator.
  - Store the freshly lyophilized enzyme-agarose at 2–8 °C.

References

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