" a world of learning"

ENZYME ACTION

NAME: **Pepsin**

DESCRIPTION: Cream coloured powder, MC23.2

ACTION: The enzyme Pepsin acts upon protein to break it down into amino acids.

Protein (Albumin, white suspension) $\xrightarrow{\text{Pepsin}}$ Amino acids (clear solution)

STORAGE: Store at room temperature.

SAFETY: Enzymes are biologically active proteins and should be handled with care. Proteolytic enzymes in particular may irritate the skin, eye or mucous membranes. Avoid direct contact or inhalation.

TIPS FOR TEACHERS:

Suggested pracs:

Prepare a 3% albumin suspension by weighing out 3g of albumin flakes (MC41.1) and adding 5mL of cold distilled water. Mix to a paste, then add 95mL of 'just boiled' distilled water.

In a test tube held at 37ºC, combine 10mL of albumin suspension, 2mL of 0.25M HCl and 3mL of 2% pepsin suspension. Maintain the temperature and record the time taken for a visible change to occur.

Your experimental design should include a control for HCl, pepsin and water with albumin.

The albumin suspension may not become completely clear due to the presence of insoluble non-protein material that is not broken down by pepsin.

Comments and further Ideas:

This exercise could also be conducted using small cubes of cooked egg white, but the reduced surface area and other variables such as the degree of denaturation (cooking) are likely to affect the time taken to observe a result.

Vary the pH of the albumin suspension by adding acid (e.g. HCl) and base (e.g.Na_2CO_3) to the test tubes to investigate the pH dependence of pepsin activity.

Pepsin is a protease enzyme found in the stomach of many mammals, a very acidic environment. The amino acids produced as a result of the enzyme breaking down the albumin are soluble and thus the solution is clear.

Fresh pineapple is another source of protease and can be investigated for enzyme activity following the above procedure.

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