" a world of learning"

ENZYME ACTION

NAME: Junket powder

DESCRIPTION: White to cream coloured powder MC 23.85

ACTION: The enzyme rennin in junket powder acts on milk to form "curds" (solids) and "whey" (liquid).

$$\text{Milk} \xrightarrow{\text{rennin}} \text{Curds} + \text{Whey}$$

STORAGE: Store dry at room temperature out of direct sunlight.

SAFETY: Junket is widely used in food preparation and is regarded as safe to use.

TIPS FOR TEACHERS:

Suggested pracs:

Dissolve 0.5g of junket powder in 20mL of distilled water at room temperature.

Warm 500mL of full cream milk to 37^{o}C in a large conical flask, then add the solution of junket with brief stirring. Note, some forms of full cream milk such as powdered, UHT or condensed may not work effectively.

Allow the mixture to stand and periodically check that the mixture has reacted by gently tilting the flask. The mixture should have "set" within 10-15 minutes.

Comments and further ideas:

Rennet is a mammalian digestive compound that contains the enzyme rennin (also known as chymosin). Rennin acts on casein in milk, causing the milk to separate into "curds" (solids) and "whey" (liquid). Junket is a powdered preparation of rennin for use in cooking. Nowadays, rennin is usually produced from microbial sources rather than by extraction from the digestive tract of calves.

By allowing the reaction to proceed without agitation, the solid curds form a network that occludes the liquid whey to form a jelly-like structure. Try shaking or stirring continuously after mixing to observe the separation of curds and whey.

Observe the effect of pH on the rate of reaction by adding suitable variants to the junket powder solution. For example, try ethanoic acid and sodium carbonate. Include a control to ensure the acid or alkali itself does not react with the milk.

Check the effect of temperature on the rate of reaction by varying the reaction temperature from the optimal 37^{o}C.

Please note: Variations in substrate composition and enzyme activity can mean that the suggested experiment might not work exactly as described in every situation.

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