Comparison of Acid and Amylase Hydrolysis of Starch

Experiment 25 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To compare starch hydrolysis in two instructor-assigned teaching systems.

Principle

Both acid treatment and amylase can break starch into smaller carbohydrate products, but their mechanisms and suitable conditions differ. Iodine and reducing-sugar tests monitor different aspects of the change.

Requirements

- Assigned starch preparation, instructor-prepared acid and amylase systems
- Timed water baths, labelled aliquots, iodine and reducing-sugar test reagents

Procedure

1. Plan

Label starch blank, acid-treated and enzyme-treated systems with the assigned conditions.

2. Begin

Start the supervised systems and record time and conditions.

3. Take teaching aliquots

At the assigned times, perform the prescribed stopping/neutralisation where needed before tests.

4. Compare

Test appropriate portions for residual starch and reducing products using controls.

5. Interpret

Explain why disappearance of iodine colour and appearance of reducing response are complementary findings.

Observations and Record

System / time	Iodine response	Reducing-sugar response
Untreated control	_____	_____
Acid system - assigned time 1	_____	_____
Acid system - assigned time 2	_____	_____
Amylase system - assigned time 1	_____	_____
Amylase system - assigned time 2	_____	_____

Result

Under the assigned conditions, starch response changed as _____ and reducing-product response as _____. Comparison and limitations: _____.

Precautions

- Use assigned controlled conditions; enzyme activity depends on temperature and pH.
- Acid-treated aliquots require the prescribed preparation before alkaline tests.
- Do not infer that every hydrolysis product is glucose.

Viva Questions and Answers

1. What does iodine indicate?

Suitable residual starch structure.

2. What does a reducing test indicate?

Reducing carbohydrate products under the test conditions.

3. Why can excessive heat stop amylase activity?

It can denature the enzyme.

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