CREATIVE BIOMART®
Assay Kit

D-Glucose GOD-POD Colorimetric Assay Kit

Product Information

Common Name

Glucose

Cat.No. Kit-2057

Product Overview

This rapid and simple enzymatic colorimetric method is used for the quantitative determination of D-glucose in food stuffs such as baking agents, diet beer and dietetic foods, as well asin pharmaceuticals, cosmetics and biological samples. The analysis of D-glucose in foodstuffs is normally performed inconjunction with D-fructose, maltose and sucrose.

Description

D-Glucose occurs widely in plants and animals. It is an essential component of carbohydrate metabolism and occurs frequently in the free form along with D-fructose and sucrose. However, the more important forms are those of di- (lactose, maltose, sucrose), tri-, oligo- and polysaccharides (dextrins, starch, cellulose). It is present in significant quantities in honey, wine and beer, and a range of solid foodstuffs such as bread and pastries, chocolate and candies. Measurement of D-glucose is extremely important in biochemistry and clinical analysis, as well as in food analysis; it is mostly determined along with other carbohydrates.

Synonyms

D-Glucose; D-Glucose GOD-POD Colorimetric Assay Kit; D-Glucose Colorimetric Assay Kit; D-Glucose Assay Kit; D-Glucose Kit; D-Glucose GOD-POD

Size

660 tests

Kit Components

Solution 1 (×2). GOD-POD reagent buffer (30 mL, pH 7.4), 0.42 M Potassium fosfate, 0.35 M p-hydroxybenzoic acid and sodium azide (0.64% w/v) as a preservative. Stable for 3 yearsat 4 °C. Dilute the contents of bottle to 1 L with distilled water and use immediately.

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Solution 2 (×2). GOD-POD reagent enzymes. Freeze-dried powder of glucose oxidase (GOD; >12,000 U), peroxidase (POD; >650 U) and 4-aminoantipyrine (80 mg). Stable for 5 years at -20 °C.
Dissolve the contents of bottle 2 in approx. 20 mL of solution 1 and quantitatively transfer this to the bottle containing the remainder of solution 1. Cover this bottle with aluminum foil to protect the enclosed reagent from light. Stable for 3 months at 2-5 °C or 12 months at -20 °C.
Solution 3. D-Glucose standard solution (5 mL, 1.0 mg/mL) in 0.2% (w/v) benzoic acid. Stable for 5 years at room temperature.

Detection method Colorimetric method

Compatible Sample Types

Wine, vinegar, fruit and vegetable products, bakery products, tobacco and paper, cosmetic, pharmaceutical, biological cultures and biological samples.

Features & Benefits

Simple colorimetric method
Stable reagents

Preparation

General information on sample preparation:
The amount of D-glucose present in the cuvette should range between 10 and 100 µg. Thus, the sample volume used (0.10 mL) implies that the sample solution must be diluted to yield a D-glucose concentration between 100 and 1000 mg/L.
To develop this assay use clear, colorless and practically neutral liquid samples directly, or after dilution; filter turbid solutions; degas samples containing carbon dioxide (e.g. by filtration); adjust acid samples, which are used undiluted for the assay, to pH 8 by adding sodium or potassium hydroxide solution; adjust acid and weakly colored samples to pH 8 and incubate for approx. 15 min; measure "colored" samples (if necessary adjusted to pH 8) against a sample blank; treat "strongly colored" samples that are used undiluted or with a higher sample volume with PVPP; crush or homogenize solid or semi-solid samples, extract with water or dissolve; extract samples containing fat with hot water.

Examples of sample preparation:

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Determination of D-glucose in milk:
Introduce 20 mL of milk into a 100 mL volumetric flask and add the following solutions: 10 mL of Carrez I solution (3.60 g of potassium hexacyanoferrate (II) in 100 mL of distilled water), 10 mL of Carrez II solution (7.20 g of zinc sulphate in 100 mL of distilled water) and 20 mL of NaOH solution (100 mM). Mix after each addition. Fill up to the mark with distilled water, mix and filter. Use 0.1 mL of the filtrate for the assay.

Determination of D-glucose in preserves, and other vegetable and fruit products:
Precisely 10 g of the sample to be analyzed should be homogenized in a mixer. Introduce 0.5 g of the sample into a 100 mL volumetric flask and dissolve with 50 mL of distilled water. Make up to the mark, mix and filter. Discard the first 5 mL of the filtrate and use the clear, undiluted filtrate for the assay (0.1 mL).

Determination of D-glucose in fermentation samples and cell culture medium:
Incubate approximately 10 mL of the solution at 90-95 °C for 10 min to inactivate most enzyme activities. Centrifuge or filter and use the supernatant or clear filtrate for the assay.

Determination of D-glucose in solid foodstuffs:
Plant materials should be milled to pass a 0.5 mm screen. Homogenize solid foodstuffs in a mixer, meat grinder or mortar. A representative sample should be weighed and extracted with water (heated to 60 °C, if necessary). Quantitatively transfer to a volumetric flask and dilute to the mark with distilled water. Mix, filter and use the appropriately diluted, clear solution for the assay.

Assay Protocol

Wavelength: 510 nm
Cuvette: 1 cm light path (glass or plastic)
Temperature: 40-50 °C
Final volume: 3.10 mL
Sample solution: 10-100 µg of D-glucose per cuvette
Read against reagent blank

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Pipette into cuvettes (mL) Blank Standard Sample
GOD-POD reagent 3.00 3.00 3.00
D-Glucose standard - 0.10 -
Sample - - 0.10
Buffer or water 0.10 - -
Mix, incubate at 40-50 °C for 20 min and read absorbances at 510 nm against the reagent blank to obtain ΔAsample and ΔAD-glucose standard.
Mixtures can be obtained with a plastic spatula or by gentle inversion after sealing with a cuvette cap or Parafilm®.

Analysis

The concentration of D-glucose (mg/l) is calculated as follows:
C(D-glucose) = (ΔAsample / ΔA D-glucose standard)*1000
If the sample has been diluted or a different sample volume was used during the reaction, the result must be multiplied by the corresponding dilution/concentration factor.

Sensitivity

The sensitivity of the assay is based on 0.010 AU and asample volume of 0.10 mL. The detection limit is of 10 µg D-glucose per assay (v = 0.10 mL).

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