FOLIN-CIOCALTEU'S REAGENT

Principle

Techniques to determine the concentration of proteins in solution in biological samples are routine procedures when knowledge of their activity is required to diagnose diseases. Proteins consist mainly of long chains of amino acids linked to each other by peptide bonds.

There are various methods for quantifying proteins, from a determination of absorbance in the UV spectrum to colourimetric methods, based on reaction with a reagent to obtain a colour. Depending on the degree of sensitivity, one or the other is applied.

Proteins such as albumin contain tyrosine in their aminogram, a phenolic compound that can react with the Folin reagent.

Since 1922 Wu proposed the use of the phenol reagent "Folin" (reagent of phenolic compounds) for the determination of proteins [5], several analytical methods for the determination of proteins were modified to include this reagent in the method.

The main components of the Folin Ciocalteu Reagent are phosphotungstic acid and phosphomolybdic acid, which are yellow in colour. This reagent is capable of being reduced by phenolic groups at basic pH, giving rise to a blue colouration that can be determined spectrophotometrically.

Applications

The Folin Ciocalteu reagent is a phenol reagent used in the determination of total proteins in serum, cerebrospinal fluid and urine. Taking into account the literature consulted and the results obtained with this product, the Folin-Ciocalteu reagent is suitable for the determination in human samples of total proteins, albumin and globulin in blood serum, fibrinogen in blood plasma or for the detection of gastric mucoprotein. It also has application in other sectors.

Material

Blood serum, cerebrospinal fluid, urine

Reagents

Code	Description
251567	Folin-Ciocalteu's Reagent (*)
182159	Sodium Hydroxide 5 mol/l (5N)
131716	Sodium Sulfate anhydrous (Reag. USP)
A1677	L-Tyrosine (Ph. Eur., USP)

Procedure

Greenberg procedure for the determination of Albumin in blood serum

Sample preparation:

1. To 0.5 mL of blood serum, add 9.5 ml of Sodium Sulfate solution 22.5%* and shake vigorously. Incubate at 37ºC for 2 hours and filter through a paper filter.
2. Take 5.0 mL of the filtrate and pass it into a 50.0 mL volumetric flask. Add 25 mL of distilled water.

* Sodium sulphate solution 22.5%. Dissolve 22.5 g of Sodium Sulfate anhydrous in hot water, let cool and make up to 100.0 mL with water.

Preparation of the standard:

Transfer 4.0 ml of 0.02% Tyrosine Standard Solution to a 50.0 mL volumetric flask. Add 25 mL of distilled water.

White: 25 mL of water in a 50.0 mL volumetric flask.

Procedure

To each of the volumetric flasks (sample, standard and blank), add 2 mL of Sodium Hydroxide 5 mol/L (5N), homogenize. Add 3 mL of Folin-Ciocalteu Reagent, stirring constantly during addition, and make up to 50.0 mL with water. Homogenize. After 5-10 minutes determine the absorbance of the sample and standard at 660 nm against the blank.

Alternatively, a calibration line can be run using different volumes of Tyrosine Standard Solution.

Interferences

Reducing substances other than phenolic groups present in the sample may interfere.

Sample preparation

All samples must be treated according to the state of technology. All samples must be unambiguously labelled.

Diagnostics

Diagnosis should be established only by authorized and qualified persons. Each application should involve appropriate controls to rule out erroneous results.

Sample preparation

All samples should be treated according to the state of the technology. All samples must be unambiguously labeled.

Storage

Keep in non-metallic containers well closed and protected from light. Keep at room temperature (+15° +25°C).

Expiration

The product stored at the indicated temperature and in a tightly closed container is usable until the expiration date indicated on the package.

Notes on use

To avoid errors, the staining must be carried out by specialized personnel. For professional use only. The national directives on safety at work and quality assurance must be complied with.

Advise on disposal of waste

Solutions used and expired solutions should be disposed of as hazardous waste and local waste disposal regulations must be observed. If further questions are asked about disposal, they may be processed through E-Mail: info.es@itwreagents.com. Inside the EU are valid the requirements based on Council Directive 67/548/EEC on the approximation of the laws, regulations and laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances in the relevant version.

Classification of hazardous substances

Observe the classification of dangerous substances on the label and the information on the safety data sheet.

Manufacturer

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(*) In Vitro Diagnostic Medical Device

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