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Glucans: Structure, Properties and Functions

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Abstract

Glucans are probably the most abundant carbohydrate in biology. Most bacteria, cells, yeasts and other living things form the cell wall. Some prepare phrases. All glucose consists of one type of repetitive monosaccharide: glucose. However, they can be found in a variety of forms and with many functions. The name originates from the Greek word "glykys", which means "sweet." Some textbooks refer to glucose as the nail cellulosic polymer made up of glucose molecules that bind to β 1-3 bonds. (When called "non-cellulosic", which are part of the cell wall of plants are excluded from this group). However, all polysaccharides containing glucose, including those that make up the cell wall of plants, can be classified as glucose. Many glucose was included in the first compounds that were isolated from various life forms to study their physiological effects, especially on mammalian immune systems.

Key Words: Glucans, Structure, Properties, Functions

Introduction:

Structure

Despite the many diversity and complexity of the structures found in nature, glycans have a relatively simple structure. All are large glucose polymers joined by glucosidic bonds, the most frequent being being bonds (1-3), β (1-3) and β (1-6).

These sugars, like glucose, like saccharides, are basically composed of three types of atoms: carbon (C), hydrogen (H) and oxygen (O), which form cyclic structures that join together. Can be Yes, creating a series.

Most glucans consist of straight chains, but the existing branches combine with the uc (1-6) bonds of gl (1-6) or α (1-4) to form gl (1-4) or α (1-). 4) Join them through glucosidic bonds.

It is important to note that most glucans with "α" bonds are used by living humans as a source of energy, in writing.

Glucans with the highest proportion of "β" bonds are more structural carbohydrates. They have a more rigid structure and are more difficult to break down by mechanical or enzymatic processes, so they do not always work with energy and carbon.

Types of glucose

These macromolecules vary according to the anatomical configuration of the glucose units that compose them. Position, type and number of branches involved. All types are classified into three types of glucans:

- uc-glucans (cellulose, lycopene, simoson or zimoson, etc.)

- α, β - glucans

- gl-glucan (glycogen, starch, dextran, etc.)

Glucans are also known as "mixed glucans" because they bind different types of glucosidic bonds. They have very complex structures within carbohydrates and are usually structures that are difficult to separate into smaller carbohydrate chains.

In general, glucans contain more molecular weight compounds, the values of which vary between thousands and millions of daltons.

Properties of glucan

In all glucose, more than 10 glucose molecules are linked together, and the most common is to look for compounds that form a single chain with hundreds or thousands of glucose residues.

Each glucan has special physical and chemical properties, which vary depending on its composition and the environment in which it is found.

When glucans are purified, they have no color, odor, or flavor, although purity is never so definite as to obtain a single molecule, and it is always studied "almost", because of this isolation. I consist of many different molecules.

Glycans can be found as homo- or heteroglycans.

- Homoglycans contain only one type of glucose anomaly

- Heteroglycans are made up of different glucose molecules.

Heteroglycans, when dissolved in water, have a reasonable suspension (they dissolve more easily when exposed to heat). In some cases, heating produces orderly structures and / or gels.

The union between the remnants of the glucose (polymer) structure is formed by glucosidic bonds. However, the structure is stabilized by "hydrostatic" interactions and some hydrogen bonds.

Features

Glucose is a very versatile structure for living cells. In plants, for example, the combination of β (1-4) bonds between β-glucose molecules causes the cell wall of each of these cells to harden, which is called cellulose.

As in plants, bacteria and fungi, a network of glucan fibers represents molecules that form a stiff cell wall that protects the plasma membrane and the cytosol found inside the cells.

The main reserve molecule in mammals is glycogen. It is a glucone that consists of many glucose residues that are added over and over again, forming a chain, which has branches throughout the structure.

In general, glycogen is synthesized in the liver of all adjuvants, and part of it is stored in muscle tissue.

in short. Not only do glucose have structural functions, but they are also important from an energy storage standpoint. Any organism that breaks the

bondIt contains enzymatic apparatus to separate glucose molecules for use as "fuel". It uses these compounds to keep them alive.

Applications in the industry

Glucose is widely used in the food industry all over the world, as it has many different properties and most do not have toxic effects in human consumption.

Many people interact with water to help stabilize the food, making emulsions or gels that give more consistency to certain culinary preparations. An example might be starch or carnation.

Artificial flavors in food are usually the product of sweet food additives, most of which are made up of glucans. They have to go through very difficult situations or for a long time to lose their effects.

The high melting point of all glucans protects very low temperature sensitive compounds in foods. Glucose "separates" water molecules and prevents ice crystals from breaking down the molecules that make up other parts of the food.

In addition, the structures formed by glucans in food are thermo-reversible, meaning that by increasing or decreasing the temperature inside the food, they can regain their flavor and texture at the appropriate taste.

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