

Learning the English technical terms about Carbohydrates

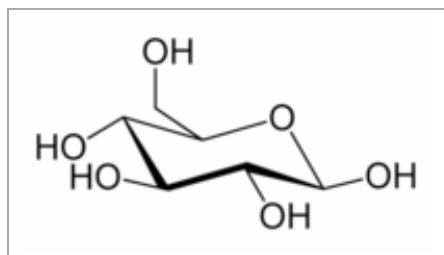
Carbohydrates are the most abundant of the four major classes of biomolecules, which also include proteins, lipids and nucleic acids. They fill numerous roles in living things, such as the storage and transport of energy (starch, glycogen) or structural support (cellulose in plants, chitin in animals). Also, carbohydrates and their derivatives play major roles in the working process of the immune system, for fertilization, blood clotting, development, and more.

Sugars, Celluloses & Starches

Carbohydrates are made of the elements carbon, hydrogen and oxygen, where hydrogen and oxygen atoms are often present in a ratio 2:1.

The basic building block of a carbohydrate is a simple sugar with a typical molecular formula of $C_6H_{12}O_6$, $C_{12}H_{22}O_{11}$, $C_5H_{10}O_5$, or others. These are mono- or disaccharides with the names usually ending in *-ose*, thus not to be confused with enzymes, which usually end in *-ase* (e.g. *lipase*).

Monosaccharides: Glucose, fructose and galactose are examples of these simple sugars. Monosaccharides are the major source of fuel for metabolism, being used both as an energy source and in biosynthesis. Monosaccharides have a typical molecular formula of $C_6H_{12}O_6$



α -D-Glucose

Disaccharides: Two joined monosaccharides are called disaccharides, and maltose, sucrose (most abundant) and lactose are some examples of these compounds.

Oligosaccharides & Polysaccharides: The distinction between these two sugar groups is based upon the number of monosaccharide units present in the chain. Oligosaccharides typically contain between three & nine monosaccharide units, and polysaccharides contain greater than ten monosaccharide units.

Cellulose: As for polysaccharides, they represent an important class of biological polymers. Their function in plants is usually for providing structure - cellulose in cell walls. For humans, cellulose is indigestible.

Starches: Humans depend on plant-derived starches for nutritional purposes. These can be found in various grains such as rice, wheat, barley, corn, etc., in finished products such as pastas or breads, and in potatoes. Glycogen is the term for stored starch in humans. Glycogens can be quickly metabolized, which suits the active lives of humans & other locomotive animals.



Data Sources: 'Biological Science', Prof. William T. Keeton, Cornell University, NY / Wikipedia

Check your understanding of Carbohydrates; Sugars, Celluloses & Starches



If you click on the questionnaire link, you will find questions on the texts of this Newsletter. You are invited to answer these or ask further questions yourself and send these to Steven L. Hanft, President CONUSBAT & Editor of the LTE Newsletter. We look forward to your replies.

Round-the-World Life Science News & Updates

Pharmaceutical:

New safety warning delays Novartis diabetes drug; BioPharmaReporter.com, Nov.6, 2007

Swiss firm Novartis today announced that it has contacted regulators regarding the safety of the 100 mg dose of its recently approved Type II diabetes drug, Galvus (vildagliptin). According to the company's latest research, the 100 mg once daily dose causes higher levels of an enzyme associated with liver damage than administering 50 mg twice daily. As such, the company has proposed amendments to the drug's prescribing information and has contacted regulators to discuss the data.

While the drug was only approved in the EU towards the end of September and has yet to reach patients, it is currently available in Brazil and Mexico in both the 50 mg and 100 mg form.

US approval has been delayed due to an 'approvable letter' issued by the US Food and Drug Administration (FDA) in February this year, requesting further information regarding "*skin-related findings*" in pre-clinical studies in primates. At present, the company does not expect to submit additional data before the end of 2009.

Medical Research:

Aging: Flip Side to Education is Seen in Dementia; NY Times, Nov. 6, 2007

People with more years of schooling appear to suffer the symptoms of dementia later than others who have it — but once it does come, it proceeds more quickly, researchers say.

The study found that for each additional year of formal education, the onset of memory loss was delayed by more than two months. The report, led by Charles B. Hall of the Albert Einstein College of Medicine in the Bronx, appeared in the Oct. 23 issue of *Neurology*.

The researchers based their findings on a study that began following the health of 488 people, ages 75 to 85, in the early 1980s. This study looked at 117 of them who had dementia.

The study suggests there may be a flip side to the benefits that education brings to the brain

when it comes to memory loss. People with a lot of schooling are believed to develop what is known as cognitive reserve.

Food & Beverage:

US-FDA to revise the reference values & mandatory nutrients; Institute for Food Technology Newsletter, Nov. 7, 2007

On Nov. 2, the US-FDA issued an advance notice of proposed rulemaking in the Federal Register, titled Food Labeling: Revision of Reference Values and Mandatory Nutrients. The notice requests comment on what new reference values the agency should use to calculate the percent daily value (DV) in the Nutrition Facts and Supplement Facts labels and what factors the agency should consider in establishing such new reference values. In addition, FDA requests comments on whether it should require that certain nutrients be added or removed from the Nutrition Facts and Supplemental Facts labels.

Personal Care:

Dr. Annelie Struessmann, Technical Director, CONUSBAT, EU REACH 'Only Rep.' Speaker at Global C&T Regulatory Conference; Nice, France Nov. 13-14, 2007

Topic: Asian Cosmetics: A Regulatory Update

- Countries of Asia with relevant cosmetic regulations
- The legislative and administrative bodies with responsibility for cosmetics
- Basic principles of the existing regulatory frameworks
- Mandatory requirements for cosmetics and toiletries
- Potential time frames: implementation schemes, announced adaptations, etc.
- How to comply with regulatory requirements in the various countries

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