Summary:

Carbohydrates are the important classes of organic compounds found in the biological systems in addition to proteins, lipids and nucleic acids. These are a set of naturally occurring compound containing carbon, hydrogen and oxygen, with hydrogen and oxygen generally in the ratio of two to one atom as in water. These include the compounds like glucose, fructose, sucrose, lactose, starch, glycogen, chitin, and cellulose. Most of the carbohydrates found in nature occur as polysaccharides of high molecular weight. Polysaccharides are also called glycans and these differ from each other due to the factors like:

- the identity of their recurring monosaccharide units,
- the length of their chains,
- the types of bonds linking the units, and
- the degree of their branching.

On basis of their recurring monosaccharide units these are classified as homoglycans and heteroglycans. Homoglycans contain only a single type of monomeric unit while heteroglycans contain two or more different kinds of monomeric units. Some homoglycans serve as storage forms of monosaccharides used as fuels for example starch and glycogen. Other homoglycans like cellulose and chitin serve as structural elements in plant cell walls and animal exoskeletons. Heteroglycans, on the other hand, provide extracellular support for organisms of all kingdoms. The rigid layer of the bacterial cell envelope which is a peptidoglycan is a heteroglycan built from two alternating monosaccharide units. In animal tissues as well, the extracellular space is occupied by several types of heteroglycans, which form a matrix holding individual cells together and give protection, shape, and support to cells, tissues, or organs. Hyaluronic acid, one of the polymers that accounts for the toughness and flexibility of cartilage

and tendon is also a heteroglycan. Heteroglycans play different functions in foods and have nutraceutical importance as well. These polymers find applications in food and pharmaceutical industry.