جامعة الانبار

- كلية : الصيدلة
- قسم: فرع العلوم المختبرية السريرية
- اسم المادة باللغة العربية: الكيمياء الحياتية
- اسم المادة باللغة الإنكليزية: Biochemistry I
 - المرحلة: الثالثة
- التدريسي: المدرس المساعد زهير عبدالستار احمد
- عنوان المحاضرة باللغة العربية: مقدمة عن الكاربو هيدرات
- عنوان المحاضرة باللغة الإنكليزية: Introduction to Carbohydrates

Assistant Lecturer. Zuhair A. ALrawi

College of Pharmacy third level

practical lab.(7) (Carbohydrates)

Carbohydrates

Carbohydrates are an important components of the nutrition, because they are easy to digest compared to other nutrients such as fats and proteins.

Carbohydrates

- Sugars have two sources:-
- A- A plant source that is involved in the synthesis of the cell walls of a plant
- **B- The animal source** is found in (blood, urine, milk) concentrated in the form of a multiple sugar called glycogen, which is found mainly in the liver and muscles.



 Compounds that contain in their composition carbon, hydrogen and oxygen in a ratio of 1:2 **Definition of carbohydrates**

$(CH_2O)_n \quad n \ge 3$

 They are organic compounds aldehydes or polyhydric ketones,
Hydrolysis, give aldehydes or polyhydric ketones.



Aldehyde and ketone





Aldehyde

Ketone

Polysaccharides exist in the form of aldehyde or polyhydric ketone





جليسر الدهيد (ألدوتر ايوز) Aldotriose ثنائي هيدروكسي أسيتون (كيتوترايوز) Ketotriose

Aldehyde and ketone

What is the difference between aldehydes and ketones?

	Aldehyde	Ketone
1 Difinition	is an organic compounds Having the general chemical formula R-CHO	is an organic compounds Having the general chemical formula R- CO-R
2 Functional Group	The functional group occurs always at a terminus of a molecule	The functional group occurs always in the middle of a molecule
3 Location	carbonyle group binds with a hydrogen atom from one end	carbonyle group binds with carbon atoms from both sides
4 Reactivity	more Reactive	Less Reactive
5 oxidation	Undergoes oxidation forming carboxylic acid	Does not undergo oxidation with out breaking the carbon chain



Monosaccharides

General composition (CH₂O)n

They are simple sugars that cannot be broken down into simpler substances such as glucose, fructose, and galactose.

Divide based on the number of carbon corn into:

Tri – Tetr – Pent – Hex – Hept – Oct -

Divide according to the presence of the effective group (aldehyde or ketone)

The most important mono sugar

- sugar (hexose) glucose, fructose, galactose
- sugar (pentose) sugar Raibose ----- RNA
- sugars (triose) glyceraldehyde, dihydroxyacetone ----- metabolism intermediates



Monosaccharides

- include:
- A. Glucose:
- It is the simplest type of carbohydrate and is called blood sugar.
- it is in the form of natural sugar in food or the body can provide it through the digestion of complex carbohydrates such as the starches found in rice, pasta and potatoes.



Monosaccharides

• B. Fructose:

- It is found in fruits and honey. It is the sweetest type of sugars and starches in terms of taste.
- combines with glucose to form sucrose.

C. Galactose:

 combines with glucose to form lactose, "milk sugar"

