



SNS COLLEGE OF NURSING
Saravanampatti (po), Coimbatore.

DEPARTMENT OF NURSING
COURSE NAME : BSC (NURSING) I YEAR
SUBJECT : NUTRITION
UNIT: I : CARBOHYDRATES
TOPIC : CARBOHYDRATES



INTRODUCTION



Carbohydrates are the body's major source of energy. There are two main types of carbohydrates Sugar and starches composed of carbon, hydrogen and oxygen

CARBOHYDRATES

Main source of
body energy





COMPOSITION



- Single sugar unit – glucose
- Combine sugar – starch
- Fiber is carbohydrate – not provide energy, can not digested by human, it is known as Cellulose and Roughage





CLASSIFICATION



Carbohydrates are classified according to the number of subunits that make them up

They are 4 types carbohydrates

- Monosaccharide
- Disaccharides
- Oligosaccharides
- Polysaccharides





MONOSACCHARIDES



- “Mono” means “Single”, “Sacchar” means “Sugar”.
- Simple sugar consist of ne sugar unit that cannot be further broken down into simpler sugars. E.g. Glucose, Fructose and Galactose.





DISACCHARIDES



- Simple Double sugar, which link with two single sugar. Important disaccharides are Sucrose, Lactose and Maltose.





OLIGOSACCHARIDES



These are compound sugar that yield 2 to 10 molecules of the same or different monosaccharaides on hydrolysis. Accordingly, an oligosaccharides yielding 2 molecules of monosaccharaides on hydrolysis is designed as a disaccharides, and the one yielding 3 molecules of monosaccharaides as a trisaccharide and so on.





POLYSACCHARIDES



Containing 10 or more monosaccharaides units attached together. E.g. Starch – digestible, Glycogen- Digestible, Fibre – digestible.





FUNCTIONS



- Energy supply for body functions
- Essential for the Oxidation of fats
- Proteins sparing action
- Provide carbon for synthesis of Non essential Amino acids.





FUNCTIONS



- Are present in some tissue connections
- Add flavour to diet
- Nucleic acid of connective tissue Matrix, Galactosides of nerve tissue.
- Necessary for proper functioning of CNS.
- Adequate hepatic Glycogen storage enhances normal liver detoxification ability.





DIGESTION



- Mouth : Chewing – Breakup food.
- Saliva – Amylase
- Pancreatic Amylase
- Intestinal Amylase



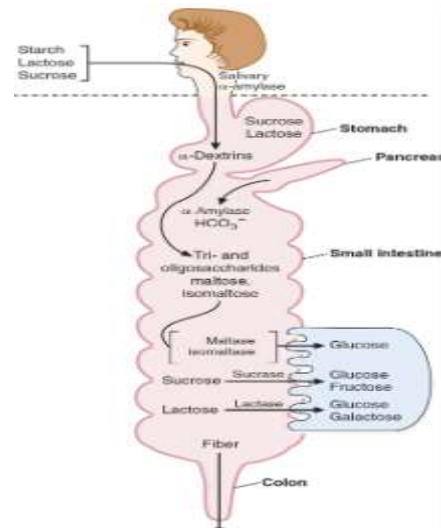
DIGESTION IN SMALL INTESTINE

SMALL INTESTINE

Maltose → Maltose → Glucose + Glucose

Lactose → Lactose → Glucose + Galactose

Sucrose → Sucrase → Glucose + Fructose



STORAGE AND METABOLISM

STORAGE

Glucose \longrightarrow In Liver & Muscle \longrightarrow Glycogen

METABOLISM

1. Anabolism

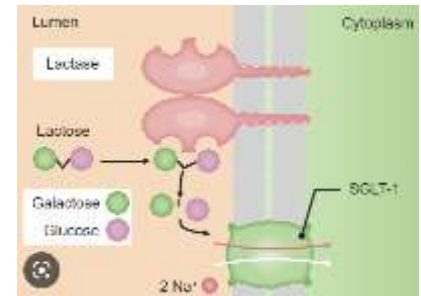
Glucose \longrightarrow Glycogen

Glucose \longrightarrow Fat (Lipogenesis)

2. Catabolism

Glucose \longrightarrow ATP

Glycogen \longrightarrow Glucose.





CALORIC VALUE



- 4Kcal/gm
- Energy needed for physical activity, work of cell and Brain function
- 40% of Total energy should from carbohydrate.
- In India 60% - 80% energy from carbohydrate.



SOURCE OF CARBOHYDRATE

✓ SUGAR:

Honey, Fruits, Soft drink, milk, Sugar

✓ STARCH:

Cereals, Pasta, Flour, Bread, Potatoes, Rootvege, Pulses.

✓ FIBER:

Cereals, Bran, Outer skin of fruits & Vege, Brown rice, Oat meals.

Pectin: Fruits



MALNUTRITION OF CARBOHYDRATE

DEFICIENCY:

- Low body weight
- Accumulation of large amount of Ketone bodies in the body.

DEFICIENCY SYMPTOM OF CARBOHYDRATES



MALNUTRITION OF CARBOHYDRATE

OVER CONSUMPTION:

- Increase dental caries
- Cause obesity
- Large amount of sugar – Gastric ulcer
- Depress appetite – soft drink
- Increased blood triglycerides – Lead to heart disease.





REFERENCE

- Darshan sohi, “ A comprehensive textbook of applied Nutrition and dietetics” , 3rd edition, published by Jaypee publication.
- Shella John, Jasmine devaselvam, “Essentials of Nutrition and dietetics for nursing”, 2nd edition, published by Wolters Kluwer.
- <https://www.slideshare.net/aiswarya1995/balanced-diet-57863742>



ASSESSMENT



- Describe the classification of carbohydrates
- Explain sources of carbohydrate
- Write about digestion, absorption and metabolism of carbohydrates.



