Assignment #2

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Q: Defination, charictristics, Classification, types and examples of Carbohydrates, protein and fats?

Def: of Carbohydrates:

Carbohydrates or Carbs are Sugar molecules. Along with protein, fats Carbohydrates are one of three main nutrients found in food and drinks. Body breaks down Carbohydrates into glocuse, ~~or blood Sugar~~ Glocose or blood sugar is the main source of energy for body Cells, Tissue and organs.

Def: 2

A Carbohydrates is an organic Compound such as Sugar or Starch and is used to Store energy.

Classification of Carbohydrates:

Carbohydrates are classified in to three main Categories based on their Chemical structure and Complexity.

(i) Monosaccharides.

(ii) Disaccharides.

(iii) Polysaccharides.

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(i) Monosaccharides:

(i) Glucose

(ii) Fructose

(iii) Galactose.

Draw the structures as well

(ii) Disaccarides:

Carbohydrates composed of two monosaccharides unit link together.

Examples:

(i) Sucrose (gloctose + fructose)

(ii) lactose (glucose + galactose)

(iii) maltose (glocose + glucose)

(iii) Polysaccharides:

Complex carbohydrates consisting of long chains of monosaccharides units.

Exaples:

(i) Starch

(ii) glycogen

(iii) Cellulose.

Sources??

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Characteristics of Carbohydrates:

⇒ They are sweet in taste. they are Soluble in water. They Contains 3 to 10 Carbon atoms, 2 or more hydroxyle (OH) groups and one aldehyde (CHO) or ketone (CO) group. The simplest group of Carbohydrates and often called simple Sugar since they cannot be fusther dehydrolysed.

add more detail in this patt

Def: Protein:

Proteins are large and Complex molecules made up of long chains of amino acid residues that play a Crucial role in Cells. Protien contain Carbon, hydrogen, oxygen, nitrogen and sulphur.

Classification Of Protein:

Protein can be Classified based on various Criteria, Such as Their Structure, function, Composition and Solubility. There are the main classification of proteins.

(1) Based on Function:

(i) Enzymatic Protein.
e.g amylase, DNA, Polymerase.

Briefly define these types as well

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(ii) Structural protein:
e.g hemoglobin, albumin.

(iii) Regulatory Protein.
e.g insulin, transcription factors.

(iv) Defenc Protein
e.g antibodies, fibrinogen.

(v) Storage Protein.
e.g ferritin, Casein.

Protein based on Composition:

1→ Simple proteins.
e.g. include globulins and albumins.

2→ Conjucated protein.

i) Glyco proteins

ii) Lipo Protein

iii) Metallo protein.

iv) Nucleo protein.

Protein based on Solubility:

(i) Fibrous Protein

(ii) Globular Protein.

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Based on Nutritional value:

(i) Complete Protein

(ii) Incomplete Protein.

Protein based on origin:

(i) Animal proteins
e.g meat, egg, fish.

(ii) Plant proteins.

e.g legumes, grains, nuts.

Characteristics Of Protein:

⇒ Proteins are high molecular weight Compounds
- The are made of several amino acids.
- The backbone of all proteins molecules is madup of amino acids.
- Proteins are colorless and tasteless (except serine which is sweet.
- Proteins are considered bricks, They make up bones, muscles, hairs, and other parts of the body.
- The deffusion rate of protein is extremely low.

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Def: Fats

A type of nutrient that we get from our diet. It is essential to eat some fats, though is is also harmful to eat too much.

⇒ Fats, also known as lipids, are a diverse group of compound that are insoluable in water but soluble in organic solvents.

Composition of fats:

- The main components of edible fats and oils are triglycerides.
- The minor components include mono- and diglycerides, free fatty acids, phosphatides, sterols, fat-soluble vitamins, tocophelos, pigments, waxes, and fatty alcohols.
- Animal fats contain smaller amounts of minor components.

Types of Fats:

i) Saturated fat

ii) Unsaturated fat

Saturated fat:

A type of fat in which the fatty acids ~~fat~~ chains have all single bonds between the Carbon atoms.

Examples:

i) Butter
ii) Ghee
iii) lard
iv) Coconut oil
v) Palm oil
vi) Poultry
vii) full-fat dairy product.
viii) beef.

Unsaturated fat:

A type of fat containing a high proportion of fatty acids molecules with at least one double bond, considered to be healthier in the diet than saturated fat.

Examples:

i) Avocados
ii) olives
iii) nuts, seeds
iv) dark chocolate
v) oils such as olive oil, Canola and Soybeen.
vi) fatty fish.

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Characteristics of fats:

- Provid energy for the body: fats provide 9 calories per gram.
- protect the body: body fat can help provide Cusion to the body and protect the vital organs.
- Insulate the body: body fat helps to insulate the body and regulate body temprature.
- Keeps Cholestrol and blood pressure under Control, and helps your body absorb vital nutrients.
- Fat helps the body absorb VA, VD and VE. These vitamins are fat-soluble, which means they can only be absorbed with the help of fats.

Good structure and presentation!