

CARBOHYDRATES

→ Carbon, Oxygen, Hydrogen

Functions

- Provide energy
- glucose → mitochondria (energy)
- glycogen → stored.

* Related enzyme

Amylase

KARBS

Simple

Complex

Monosaccharides

→ MOST BASIC UNITS

→ smallest unit to be absorbed into bloodstream

Disaccharides

→ 2 single sugars joined together

Eg.

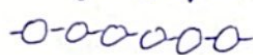
glucose $C_6H_{12}O_6$
Monosaccharide

Malrose (2 glucoses)
Disaccharide

Starch → glycogen

Polysaccharides

→ Many sugar molecules joined together



Starch (lots of glucose in a chain)

Polysaccharide

Digestion

Complex Carb

Mouth

Double sugar

Small intestine

Single sugar

absorb into bloodstream

* Stomach doesn't digest carbs.

Tests

Starch

Iodine test

① drop iodine into substance

→ Remain yellowish-brown: No starch

→ Turn blue-black: Yes starch!

Reducing sugars

→ All single sugars

Benedict's Test:

Most double sugars (all except SUCROSE)

① Mix substance with Benedict's solution (shake it!)

② Heat in water bath (strong heat)

Blue → Green → Yellow → Orange → Brick red
none 1:1 bit some two bit A LOT.

FATS

→ Carbon, Hydrogen, Oxygen

↳ type of lipid



Functions

- Provide insulation
- store energy (use it now)
- reduce water loss
- cushioning for organs

Triglyceride (type of fat)

Digestion

Fats

Small intestine

Only SE digests fats

fatty acids + glycerol

* Related enzyme

⇒ **Lipase**

Tests

Ethanol emulsion

① mix ethanol & substance (1:1)
shake well

white emulsion

Yes fats

clear mixture

No fats

PROTEINS

Hydrogen, Carbon, Oxygen, Nitrogen. (SOMETIMES sulfur)

↳ building block of every cell (human cell)

Functions

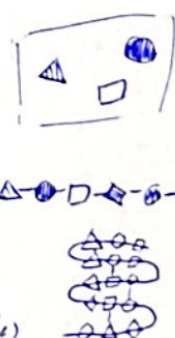
- growth/development/repair damaged cells
- antibodies → fight disease
- form enzymes.

Structure

Base unit → Amino Acid

Polypeptide (chain of ams)

Proteins (folded polypeptide)



Tests

Biochemical test

① NaH_2 solution + sample (1:1)
shake well.

② Drop in Copper (II) Sulfate (1 drop at a time)

→ Turn violet

Yes Proteins.

Remain blue

no proteins