

① Name the bile salts.

Bile salts are synthesized in liver. They are

- Cholic acid and
- Chenodeoxycholic acid.

② Define ketosis and write the causes of ketosis

Ketosis is a disorder of excessive production of ketone bodies.

Causes

- Starvation and
- Uncontrolled diabetes

③ PUFA.

PolyUnsaturated fatty acids (PUFA) are fatty acids that contain more than one double bond in their backbone.

eg: Walnuts, Corn Oil.

④ Name the bile pigment

- Bilirubin (orange or yellow in colour)
- Biliverdin (green)

⑤ Phenylketonuria

Phenylketonuria (PKU) is an inherited disorder that increases the levels of a substance called phenylalanine (an essential amino acid) in the blood.

⑥ Atherosclerosis

Atherosclerosis is a disease in which the artery narrows and hardens due to build up of fats, cholesterol and other substances in the artery wall. This leads to the formation of plaque and causes obstruction of blood flow to the heart.

⑦ Hypercholesterolemia

• Increase in plasma cholesterol ($>200\text{mg/dL}$) is known as hypercholesterolemia.

• It is due to increased cholesterol synthesis and also the availability of acetyl CoA is increased.

⑧ Fatty Liver

Fatty liver is also known as hepatic steatosis. It occurs when too much fat builds up in liver cells.

Major risk factors include

- Obesity and
- type 2 diabetes.

(9) Good Cholesterol

High Density Lipoprotein (HDL) is good cholesterol.

Bad Cholesterol

Low Density Lipoprotein (LDL) is bad cholesterol.

(10) VLDL

Very Low Density Lipoprotein (VLDL) is a type of lipoprotein, which transports endogenous triglycerides from intestine to adipose tissue for energy.

(11) Steroid

Steroid is a biologically active organic compound with 4 rings arranged in a specific molecular configuration.

Eg: Prednisolone.

(12) Carnitine and its function

Carnitine is a quaternary ammonium compound involved in metabolism in most mammals, plants and some bacteria

Function

- It transports long chain fatty acids into mitochondria, they are oxidised to produce energy.

- It plays an important role in energy production.

(13) Ketone bodies

Ketone bodies are metabolic products that are produced in excess during excessive breakdown of fatty acids.

Ketone bodies	{	Acetoacetate	} true ketones & possess
		Acetone and	
		β -hydroxybutyrate	- does not possess

a keto group.

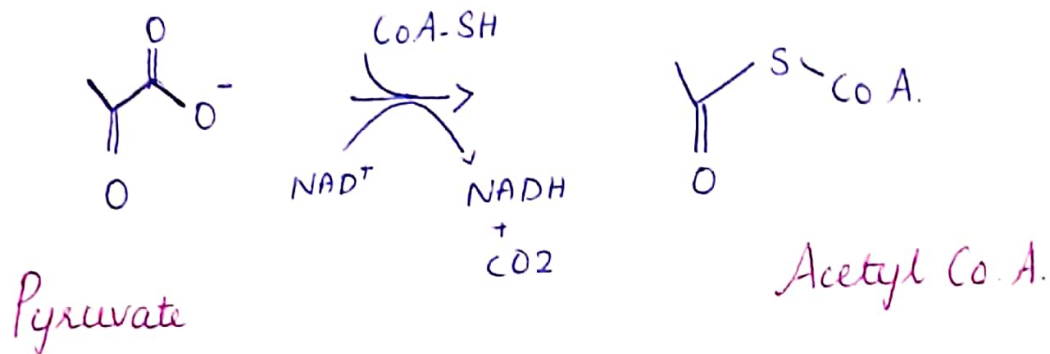
(14) Sources of Vitamin D

- Flesh of fatty fish
- Fish Liver Oils. and
- Mushrooms etc...

(15) Formation of acetyl CoA from pyruvate

Each pyruvate molecule loses one carbon atom with the release of CO_2 .

During breakdown of pyruvate, electrons are transferred to NAD^+ to produce NADH .



(16) How many ATPs will glucose give on complete oxidation?

Glycolysis \Rightarrow 7 ATPs
Pyruvate dehydrogenase \Rightarrow 5 ATPs
TCA cycle \Rightarrow 20 ATPs

} Overall yield \Rightarrow 32 ATPs

(17) How many ATPs will palmitic acid give on complete oxidation?

When one palmityl CoA is oxidised, 7 FADH_2 , 7 NADH and 8 acetyl CoA are formed

7 FADH_2 , each generate 1.5 ATP (approx) \Rightarrow 10.5 ATP

7 NADH , each generate 2.5 ATP (approx..) \Rightarrow 17.5 ATP

8 acetyl CoA, each produces 10 ATP \Rightarrow 80 ATP

108 ATP

Since 2 ATP molecules were used up in the activation of fatty acids ($108 - 2 = \underline{106 \text{ ATP}}$)