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Subject : Biochemistry

Department. Bs Radiology sec b

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Question 1: write steps involve in uric acid formation?

Answer: The following steps are involved in uric acid formation.

>Uric acid is synthesized mainly in the liver, intestines and the vascular endothelium as the end product of an exogenous pool of purines, and endogenously from damaged, dying and dead cells,

whereby nucleic acids, adenine and guanine, are degraded into uric acid.

Question 2: Write down clinical significance of following enzymes?

Answer:> **ALKALINE PHOSPHATESE**

Alkaline phosphatase is raised beyond normal level in serum in case of,

- a. Obstructive jaundice
- b. Bone disease associated with increased osteoblastic activity.
- c. Hyperparathyroidism

Normally growing children have increased serum Alkaline phosphatase due to bone formation.

>**CREATINE KINASE:** This is also known as creatine phosphokinase.

It has three isozymes as CKmm in skeletal muscles,

CKbb in brain tissue, CKmb in cardiac muscles.

Creatine kinase value in the serum is increased in the following clinical conditions.

a. Myocardial infarction is more specific for MI and is raised in the early three hours after the onset of chest pain.

b. Muscular dystrophies.

c. Severe exercise and after intra muscular injection.

=>**Gamma-glutamyl transferase:** GGT Used for glutathione synthesis

Normal range 10-30 U/L

Moderate elevation observed in, infective hepatitis and prostate cancer.

GGT is increased in alcoholics despite normal liver function tests,

Highly sensitive to detecting alcohol abuse.

Question3: how many proteins are involved in electron transport chain and how do electrons move in the electron transport chain?

Answer: There are four protein involved in electron transport chain.

The electron transport chain is a series of four protein complexes that couple redox reactions, creating an electrochemical gradient that leads to the creation of ATP in a complete system named oxidative phosphorylation. It occurs in mitochondria in both cellular respiration and photosynthesis.

=>The electron transport chain is a series of complexes that transfer electrons from electron donors to electron acceptors via redox (both reduction and oxidation occurring simultaneously) reactions, and couples this electron transfer with the transfer of protons (H<sup>+</sup> ions) across a membrane.

Question 4: Write down the four step involved in beta oxidation?

Answer: Beta oxidation takes place in four steps.

Dehydrogenation, hydration, oxidation, thiolysis.

=>**Dehydrogenation:** These catalyze the removal of hydrogen from substrate. These are either aerobic and anaerobic Dehydrogenase.

=**Hydration:** Hydration. In the second step, the double bond between C2 and C3 of trans- $\Delta^2$ -enoyl-CoA is hydrated, forming the end product L- $\beta$ -hydroxyacyl CoA, which has a hydroxyl group (OH) in C2, in place of the double bond. This reaction is catalyzed by another enzyme: enoyl CoA hydratase. This step requires water.

>**Thiolysis:** Thiolysis occurs between C2 and C3 (alpha and beta carbons) of 3-ketoacyl CoA. Thiolase enzyme catalyzes the reaction when a new molecule of coenzyme A breaks the bond by nucleophilic attack on C3.

>**Oxidation:** oxygen is added to H2 which is removed from the substrate eg. ascorbic Acid oxidase.

Question no 5: how uric acid formation takes place in body?

Answer: Purines are nitrogen-containing compounds, which are made

inside the cells of your body (endogenous), or come from outside of your body, from foods containing purine (exogenous). Purine breaks down into uric acid.

Increased levels of uric acid from excess purines may accumulate in your tissues, and form crystals.

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