Q What step involved in uric acid formation?

Ans Uric acid stone formation
Kidney stones can ~~microcrystals~~ form through deposit of sodium urate microcrystal
Saturation level of uric acidity (pK_a) = 5.6
Solubility in water: 6 mg/100ml (at 20 c)
chemical formula: $C_5H_4N_4O_3$
melting point: 300 c (572 f, 573 k)
Uric Acid
Uric acid a heterocyclic
Compound of carbon hydrogen oxygen and nitrogen with formula $C_5H_4N_4O_3$
it form ions and salts known as urates and acid urates such as ammonium acid urate
uric acid is a purine

of the metabolic and it is a normal Component of nucleotides and it Component of urn. High blood Concentration of uric acid can lead to gout and are associated with other medical Conditions including diabetes and the formation of a ammonium acid urate kidney Stone.

Xanthin is an enzyme which Catalyze the formation of uric acid from xantin and hypoxanthine which in turn are product from other purine. xanthine oxidase is a large enzyme whose active site Consists of the metal

(3)

molybdenum bound to sulfur and oxygen (10) within cells xantine oxidase can exists as xantine dehydrogenase and xantine oxidoreductase which has also been purified from bovin milk and spleen extract (11) uric acid is released hypoxic condition (low oxygen saturation) (12)

(5) How uric acid formation takes place in body? They can also be formed in the body when DNA is broken down. when purine are broken down to uric acid in the blood the body gets rid of it when you urinate or have a bowel movement. But if your body makes too much uric acid or if your ~~kidneys~~ body makes too much uric acid or if your kidneys aren't working well uric acid can build up in the blood.

Learn about eight natural ways to lower uric acid levels. -

(1) Limit purine-rich foods
(2) Avoid drugs that raise uric acid levels
(3) maintain a healthy body weight
(4) Drink Coffee
(5) Eat more low purin food
(6) try a vitamin c supplement
(7) Avoid alahol and sugar drinks
(8) Eat cherries

Symptoms :-

Symptoms of hyperuricemia you may have fever chills fatigue if you have (Bacteria) from cancer and your uric acid levels are elevated you may notice an inflamation of a joint. if the uric acid crystals deposit in one of your joints

Q3 How many proteins are involve in electron transport chain and how de electron move in the electron transport chain?

Ans. Electron transport and oxidative phosphorylation each turn of TCA cycle gentate 3 NADH and 1 FADH2.

each electron transport and oxidative phosphorylation occur in the mitochondria

$NADH + (1/2)O_2 + H^+ \rightarrow NAD^+ + H_2O$

ADP + PO ATP + 7.3 kcal/mol

energy from NADH can be used to synthesis of ATP several times.

Oxidative phosphorylation

Oxidative phosphorylation is the process by which

The energy stored in NADH and FADH

oxidat step : ETC

$NADH + H^+ - \frac{1}{2} O_2 \rightarrow NAD + H_2O$

$FADH_2 + \frac{1}{2} O_2 \rightarrow FAD + H_2O$

phosphorylation step

$ADP + P_i \rightarrow ATP$

ETC

ETC is made up 4 different Complexes and Carriers. each Sequental carrier in the ETC has increasing reduction potent greater affinity for electron and energy released during the transfer used to transport across the inner mitochondria membrane against electrochemical gradient

Complex I uses NADH to reduce CoQ and then transf to electron carriers

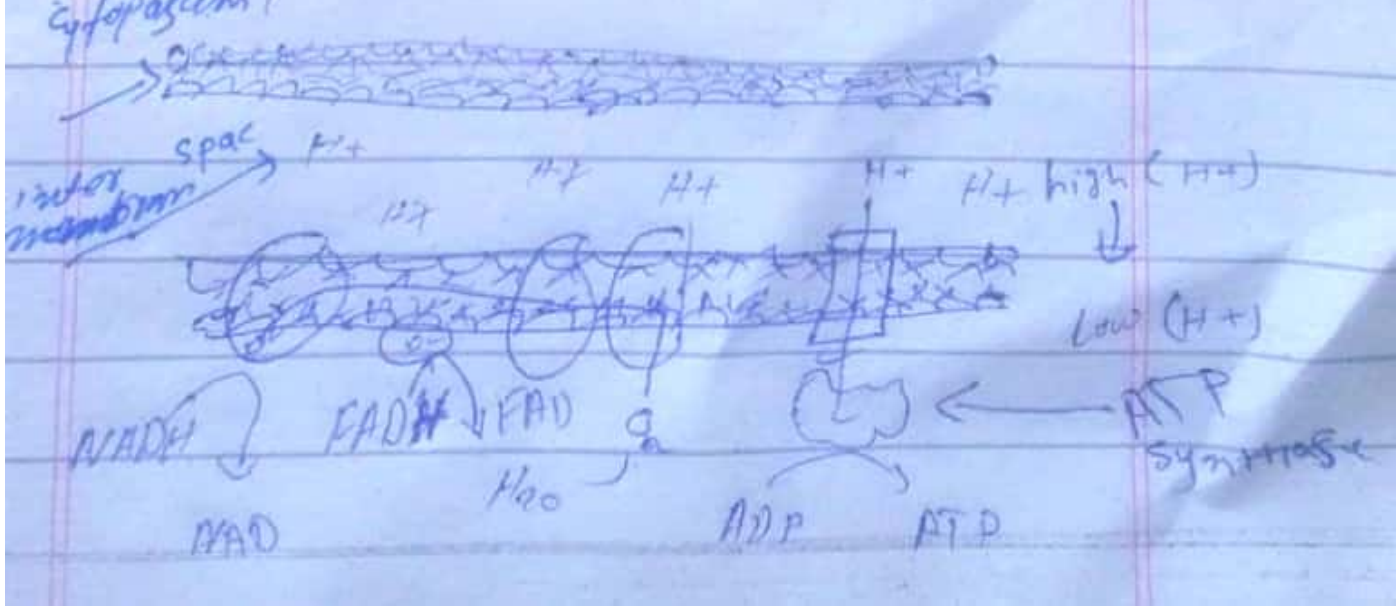
of Complex 2.

Complex II uses $FADH_2$ product for the conversion of Succinate to fumerate in the CA cycle and also reduce CoQ which will transfer H^+ to O_2 effects in Complex 3 However that NADH generates energy than $FADH_2$ since 6 H^+ are moved into the intermembran space Compared to the for Complex 2

$$\frac{1}{2} O_2 \rightarrow + O \rightarrow H_2O$$

energy released in the electron transport in Complex 1, 3, 4 will be used to transport H^+ across the membrane and

electron transport to
Co to form water
The Respiratory Complex
are proton pumps
As electron pass through
Complex I, III and IV
hydrogen ions are pumped
across the inner mitochondrion
membrane into the intermembrane
space
The Proton Concentration
in the intermembrane
space increase relative
to the mitochondrial
matrix which generates
a proton motive force



(w) Q write down the four steps involved in beta oxidation?

Ans Beta oxidation takes place in four steps. dehydrogenation hydration oxidation and thyeliSis. Each step is Catalyzed by a distinct enzyme Briefly each cycle of this process begins with a acyl-CoA Chain and ends with an acyle-CoA one $FADH_2$ one NADH and water and the acyle-CoA Chain becomes two Carbons Shorter

Dehydrogenation :- Step ①

In the first step acyle-CoA is oxidized by the enzyme acyle CoA dehydrogenation. A double

bond is formed between (C_2 and C_3) of the acyle CoA chain entering the beta oxidation cycle. The end product of this reaction is trans-Δ^2-enoyle-CoA (trans-delta 2-enoyl CoA) the step uses FAD and produces $FADH_2$ which will enter the citric acid cycle and form ATP to be used as energy (notice in the following figure that the carbon count starts on the right side the rightmost carbon below the oxygen atom is C_1 then C_2 on the left forming a double bond with C_3 and so on)

Hydration Step -> 2 :-

In the Second Step, the double bond between C_2 and C_3 of trans-Δ^2-enoyl-CoA is hydrated forming the end product L-β-hydrated CoA, which has a hydroxyle group (OH) in place of the double bond. the reaction is catalyzed by another enzyme : enoyl CoA hydrates the Step requires water.

Oxidation (step (3) :-

In the third Step the hydroxyl group C_2 of L-β-hydroxyacyle CoA is oxidized by NAD+ ion reaction that is catalyzed by 3-hydroxyacyle-CoA dehydrogenase. the

The end product are β-ketoacyl CoA and NADH + H. NADH will enter the citric acid cycle and product ATP that will be used as energy

Thiolysis step (4) :-

Finally, in the fourth step, β-ketoacyle CoA is cleaved by a thiol group (SH) of another CoA molecule (CoA-SH) the enzyme that catalyzes this reaction is β-ketothiolase the cleavage takes place between C_α and C_β therefor the end product are one Acetyl-CoA molecules with the original two first Carbons (C_1 and C_2) and a acyle CoA chain two Carbon shorter than the original acyle-CoA chain that entered the beta oxidation cycle.

Q2 Write down Clinical Significance of the following enzymes.
(a) Creatine Kinase (b) Gamma-glutamyl transfe
(c) Alkaline Phosphatase?

Ans:- **Creatine kinase :- (CK)**

⇒ Is an enzyme found in the heart, brain, skeletal and other tissues. Increased amounts of CK are release into the there is muscle damage. This test measures the amount of Creatine kinase in the blood. The small amount of CK that is normally in the blood come from skeletal muscles. Any condition that causes muscle damage and interferes with muscle energy production or use can cause an increas in the muscles diseases caused by high level of CK.

⇒ CK-MB (Creatine kinase myocardial band) is an isoenzyme of CK, Your muscle makes 3 forms of CK, including CK-MB.
CK is found in the heart, muscles and other organs. These include the small intestines, brain and uterus. If you have a heart attack, injured heart muscle cells release CK-MB into your blood. Because many tissues contain CK, high levels of CK can be a sign of a valid problems. Higher CK-MB may point more directly to heart damage.

(B) Gramma-glutamyl transferase (GrGr.T) :-

The gamma-glutamyl transferase (GrGrT) test may be use to determine the cause of elevated alkaline phosphatase (ALP). Both "ALP" and "GrGrT" are elevated in disease of the bile ducts and in some liver diseases, but only "ALP" will be elevated in bone disease.

And bile also help in fat digestion but in the case of Liver disease bile unable to perform its activity properly Bile use fat's to make energy for body with the help of L-carnitine

L carnitine bind with body fat's and carries from belly or abdemine to livers where fat's degreded by bile juice.

(C) Alkaline phosphatase "ALP".

"ALP" Is an eggyme that found in the liver and bone and is important for breaking down proteins. Higher than normal level of "ALP" many indicate liver damage or disease, such as a blocked bile duct, or certain bone diseases.

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⇒ "ALP" helpful large protein molecules into amino acid.
Amino acid is the unit of protein, So the breakdown of protein molecules is done by "Alkaline phosphatase enzyme.
In bone disease these enzyme are cause malfunction.
So that's why the bone disease apear.
When In liver the "ALP" level decrease it cause blocking the duct's of liver and bile too.