Biochemistry.

Archive – Final (Wateen).

A 3-year-old child was brought to you with bow legs, protruding forehead, and presence of osteoid tissue (knobs) on ribs. This disorder is due to deficiency of which vitamin and what is the most active form?

Select one:

a. Vitamin A -- beta-carotene

b. Vitamin A-11-cis-retinal

c. Vitamin D-25 hydroxy-cholecalciferol

d. Vitamin D 1,25 dihydroxy-cholecalciferol

e. Vitamin E- y-tocopherol

Regarding Lactose Intolerance, one of the following is correct?

Select one:

a. It is caused by deficiency of the sugar lactose in milk

b. It has symptoms like constipation and fever

c. due to deficiency of lactase enzyme, the lactose found in milk will be absorbed from the wall of small intestine intact

d. GIT disturbances are resulted from undegraded lactose reaching the colon intact

e. Small babies are given the milk formula AR

This test is semiquantitative and can indicate the amount of sugar present in urine of diabetic patient depending on the resulting colour?

Select one:

a. Iodine test

b. Molisch test

C. Benedict's Test

d. Seliwanoff Test

e. Fisher Test

This polysaccharide is hetero, natural, linear and mainly found in mast cells?

Select one:

a. Glycogen

b. Hyaluronic acid

c. Dermatan sulphate

d. Heparin

e. Chitin

The route by which iron is transported in the circulation from the intestine to the sites of metabolism in the body?

Select one:

a. As simple Fe2+ in the serum

b. Bound to albumin

c. Bound to ferritin

d. Bound to transferrin

e. As simple Fe3+ in the serum

The main components of vegetable oil is?

Select one:

a. Phosphoglycerolipids

b. Gangliosides

C. Sphingomyelin

d. Cholesterol

e. Triglycerides

Which of the followings does not contain glycerol?

Select one:

a. Phosphoglycerides

b. Phosphatidylinositol

C. Sphingomyelins

d. Triacylglycerols

e. Phosphatidate

One of the following compounds is not considered as modified sugar?

Select one:

a. glucuronic acid

b.glycerol

C. deoxyribose

d. glyceraldehyde

e. glucosamine

One of the following is not deficient in milk?

Select one:

a. Vitamin D

b. Vitamin C

c. Vitamin K

d. Vitamin A

e. Copper

The normal PH of human milk is?

Select one:

a. 5.5-7

b. 6.8-7.4

c. 4.7-7.5

d. 6.6 6.8

e. 5.5 7.4

Which of the following vitamins best matches its underlying mechanism of activation to coenzyme form? Select one:

a. Thiamin by oxidation

b. Niacin by adenylation

c. Riboflavin by methylation

d. Cobalamin by reduction

e. Folate by phosphorylation

Actin filaments are? Select one:

a. also known as microtubules

b. able to assemble and disassemble from component proteins

c. found in the center of flagella and cilia

d. intermediate in size between microtubules and microfilaments

e. made of different kinds of components in different tissues

Urine may contain lactose during last third of pregnancy, it could be differentiated from glucose in urine in the diabetics by? Select one:

a. Osazon test

b. Electrophoresis

c. Bradford method

d. Fehling test

e. Benedict test

Which of the following is TRUE as regards water-soluble vitamins? Select one:

a. They act mainly as coenzymes

b. They are excreted mainly in faeces

C. All of them are heat- and light- stable

d. They require chylomicrons to be transported to chyle

e. Excess dietary intake causes toxicity

Many factors affect calcium absorption, Which of the following carbohydrate is effective in promoting the calcium absorption? Select one:

a. Sucrose

b. Maltose

C. Lactose

d. Xylose

e. Galactose

Standard amino acid with secondary amino group attached to alpha carbon? Select one:

a. Proline

b.Tyrosine

C. Alanine

d. Glycine

e. Lysine

As regard eye tears, all the following sentences are true except? Select one:

a. Eye lubricant

b. It becomes hypertonic with profound flow

C. Have protective function against infection

d. Protein content is 0.6 to 0.18g/dl

e. PH 7 to 7.6

Which of the following vitamins CORRECTLY matches an important cause of its deficiency? Select one:

a. Vitamin B9 in obstructive jaundice

b. Vitamin B3 in anticoagulant therapy overdose

c.Vitamin B2 if boiling of food

d. Vitamin C in vegetarian

e. Vitamin B1 in chronic alcoholism

Covalent modifications that increase the activity of allosterically regulated enzymes do so by? Select one:

a. Adding phosphate groups to essential amino acids in the active site

b. Causing the enzyme to fold into a more active configuration

C. The involvement of the main source of cellular energy

d. Increasing the amount of total enzyme present

e. Increasing the rate of enzyme degradation

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As regard points of differentiation between human milk and cow milk, all the following are true EXCEPT? Select one:

a. Human milk contain less mineral elements than cow's milk

b. Cow's milk contains higher free cholesterol while human milk contain mainly ester form

c. Phospholipids in cow's milk twice that of human milk

d. Cow's milk is sweeter than human milk

e. Human's and cow's milk contain the same amount of fat

The structure of GM2 is different from cerebrosides by? Select one:

a. Number of fatty acids

b. Type of alcohol

c. Presence of choline

d. Number of carbohydrate molecules

e. Presence of serine group

Gluconic acid results from? Select one:

a. oxidation of aldehyde group of glucose

b. reduction of aldehyde group of glucose

C. oxidation of terminal OH of glucose

d. reduction of terminal OH of glucose

e. oxidation of chiral carbon number 5 of glucose

The process of separation of mixture into its components by partition between two phases is called? Select one:

a. Electrophoresis

b. Chromatography

c. Dialysis

d. Chemical precipitation

e. Centrifugation

Fatty acids, choose the wrong statement? Select one:

a. carbon number 3 is called B-carbon

b. most of the fatty acids found in nature have an even number of carbon atoms

C. At pH 9 fatty acids are not ionized

d. Stearic fatty acid is a saturated fatty acid

e. Unsaturated fat has less energy than saturated fat

What is the proportion of glycine residues in collagenous regions? Select one:

a.Half

b. One-tenth

c. One-fourth

d. One-third

e. One-sixth

Which of the following best describes vitamin D? Select one:

a. 24,25 dihydroxy-cholecalciferol is the most active form

b. Calcitriol increases renal calcium reabsorption

C. At low calcium level 1,25dihydroxy-cholecalciferol enhances bone mineralization

d. Excess vitamin D is excreted in urine

e. Hypervitaminosis D occurs most commonly due to exposure to sunlight

The most common cause of familial hypercholesterolemia is? Select one

a. A high cholesterol diet

b. Defective cholesterol

c. Genetically defective LDL receptor synthesis

d. Accumulation of chylomicrons in the blood

e. Defect in HDL

Which of the following components is found in all sphingolipids? Select one:

a. A carbohydrate

b. A negative charge

c. A phosphate group

d. An amino alcohol

e. Cholesterol

Which of the characteristics below apply to free cholesterol? Select one:

a. It consists of 17 carbon atoms.

b. It has three hydroxyl groups.

C. It is completely hydrophobic structure.

d. It increases the rigidity of cell membrane.

e. Low levels may lead to atherosclerosis.

Iron deficiency anaemia is less common in breast feeding babies due to? Select one:

a. Breast milk contain the required amount for the baby

b. The newborn are not requiring high iron

C. They store iron in their liver during prenatal life that is sufficient till weaning time

d. The mothers always give them iron supplementation

e. The iron is highly absorbed due to high content of calcium in milk

The iron is oxidized to ferric form (Fe3+) by which of the following? Select one:

a. Ferritin

b. HCL

C. Transferrin

d. Hemosidrin

e. Ceruloplasmin

One of the following is not correct regarding cellobiose? Select one

a. It is a reducing sugar

b. This disaccharide results from degradation of celulose

C. It consists of two B-glucose units

d. The monomers in cellobiose are found in the D-configuration and as cyclic pyranose rings

e. The glucose units are joined together by a-1,4 glycosidic bond

can affect the catalytic activity of the enzyme. Which of the following statements concerning that effect is correct? Select one:

a. An increase in temperature can stop the reaction by denaturing the enzyme

b. An increase in temperature can increase the reaction rate by increasing the speed at which molecules move

C. An increase in temperature to the optimum temperature maximizes reaction rate

d. More than one correct response

e. No correct response

Deformity of the bones that occurs due to vitamin D deficiency in growing children is called? Select one:

a. Hemosidrosis

b. Osteomalacia

c. Osteoporosis

d. Ricketss

e. Hemochromatosis

Which of the following is FALSE as regards vitamin A metabolism? Select one:

a. In light, rhodopsin is dissociated to 11 cis-retinal and opsin

b. Retinal can be reduced to retinol

C. Retinol-binding protein transthyretin complex is important for its transport in plasma

d. Excess vitamin A is stored in liver in the form of retinyl ester

e. Retinoic acid can regulate the level of expression of certain genes

A 20-year-old woman was admitted to hospital complaining from bilateral burning sensation of the lower extremities and difficulty to walking. Laboratory investigation revealed macrocytic anemia and high plasma and urine L-methylmalonic acid. What is the probable deficient vitamin? Select one

a. B12

B. B1

c. B2

d.B3

C.B9

Which of the following molecules is not a fatty acid? Select one

a. CH3(CH2)14COOH

b. CH3(CH2)7CH=CH(CH2)7COOH

c. CH3CH2(CH=CHCH2)3(CH2)6COOH

d. (CH3)4CH(CH2)3OH

e. CH3(CH2)7CH=CH(CH2)9 COOH

All the following factors decrease calcium absorption except? Select one:

a. Lysine

b. Phytate and oxalate

C. Free fatty acids

d. High PH

e. High phosphate diet

Choose the correct statement Select one:

a. myosin is a tetramer protein

b. tropomyosin protein binds head to tail with actin thin filament

C. troponin complex contains five subunits

d. myoglobin protein has the quaternary structure level

e. the heavy chain of myosin contains four domains

The normal PH of sweat is? Select one:

a. 2.7-4

b.5.7-7

c. 6.7-7.5

d. 3.7 to 4.7

e. 4.7 to 7.5

Which of the following conversions best matches its required vitamin? Select one:

a. Proline-> hydroxyl proline (Menaquinone)

b. Glutamate gamma -> carboxy glutamate (Tocopherol)

c. Deoxy UMP -> deoxy TMP (Thiamin)

d. Tryptophan -> Niacin (Retinol)

e. Homocysteine -> Methionine (Cobalamin)

The highest phospholipids content is found in? Select one:

a. Chylomicrons

b. Very low density lipoprotein

c. Low density lipoprotein

d. High density lipoprotein

e. Intermediate density lipoprotein

After the cyclic sugar formation, the carbonyl carbon will be converted to? Select one:

a. anomeric carbon

b. achiral carbon

c. alcoholic carbon

d. carboxylic acid

e. ketonic group

Which of the following vitamins contains sugar acid in its structure? Select one:

a. Riboflavin

b. Thiamin

C. L-ascorbic acid

d. Niacin

e. Folic acid

One of the regulatory mechanisms of enzymatic activity is the covalent modification, which statement is false about such a mechanism? Select one

a. It is reversible

b. It is slower than allosteric regulation

C. It is irreversible

d. Phosphorylation is a common covalent modification

e. It is requiring the activity of two enzymes

C6H1206 is the molecular formula of all of the following sugars EXCEPT? Select one:

a. Glucose

b. Fructose

c. Galactose

d. Mannose

e. Ribose

Which of the following vitamins CORRECTLY matches its deficiency state? Select one:

a. L-ascorbate deficiency -> Neural tube defects

b. Riboflavin deficiency-> Pernicious anemia

c. Thiamine deficiency -> Beri beri

d. Folate deficiency -> Scurvy

e. Cobalamin deficiency -> Rickets

Chylomicron, IDL, LDL and VLDL all are serum lipoproteins. What is the correct ordering of these particles from the lowest to the greatest density? Select one:

a. LDL, IDL, VLDL, Chylomicron

b. Chylomicron, VLDL, IDL, LDL

c .VLDL, IDL, LDL, Chylomicron

d. Chylomicron, IDL, VLDL, LDL

e. IDL, chylomicron, LDL, VLDL

If the OH group at ONLY one chiral carbon in the linear structure of monosaccharides is located on the right or the left, then the resulting stereoisomer is assigned as? Select one:

a. L-sugar

b. D-sugar

c. Epimer

d. a-sugar

e. B-sugar

Which one of the following steroids contains 19 carbon atoms? Select one:

a. Estradiol

b. Cortisol

c. Cholesterol

d. Testosterone

e. Progesterone

Which of the following is FALSE as regards antioxidant vitamins? Select one:

a. Vitamin E protects cell membranes from oxidative stress

b. Tocopherols prevent oxidation of low density

lipoprotein (LDL)

C. L-ascorbic acid converts ferric to ferrous iron for better absorption

d. Provitamin-A is effective antioxidant

e. Vitamin D decreases the rate of glutathione reductase synthesis

Upon adding an inhibitor to an enzyme-catalyzed reaction, the rate of reaction is markedly decreased, then, the rate does not show any increase upon increasing the substrate concentration. What is your conclusion about the inhibitor? Select one:

a. That it is a kinase

b. That it is a competitive or noncompetitive inhibitor

C. That it binds the enzyme's active site only

d. That it is an inorganic or competitive inhibitor

e. That it is a noncompetitive or uncompetitive inhibitor

There are different mechanisms for regulating enzyme activity including the allosteric one. which of the following would usually be found in such a mechanism? Select one:

a. The need for cofactors

b.The enzyme is a monomeric molecule

C. Both activating and inhibitory activity by one modulator

d. Feedback inhibition by the reaction end product is not existing

e. Cooperativity

The glucose is the main energy substrate in? Select one:

a. Brain cells

b. Skeletal muscles

C. Liver cells

d. Heart cells

e. Kidney cells

A pre-mature infant was delivered before completing 28 week of pregnancy. He suffers from hemolytic anemia.The most likely deficient vitamin is E. What is the main action of this vitamin to prevent anemia? Select one:

a. Helps iron absorption by reducing iron to ferrous

b.Stimulates RBC maturation by increasing purine and pyrimidine synthesis

C. Prevents the oxidation of red blood cell membranes

d. Acts as a co-enzyme