

CVS-Biochemistry

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Lecture 1

Biochemistry of cardiac
muscle-1

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CVS-Biochemistry **Lecture 1**

1. Creatine kinase is important in phosphocreatine production, what statements are correct?

- A. CK not associated with myofilaments
- B. isozyme is found in mitochondria (mi-CK) and accounts for more than 50%
- C. The mi-CK isoform is coupled to the outer membrane
- D. replenishing ATP in ATPase active sites, such as myosin heads.
- E. low Ck/ATP not fatal

Answer : D

2. Phosphorylation/dephosphorylation in PDH is regulated by kinase and phosphates, what is correct?

- A. Mg^{++} and Ca^{++} activate inhibiting enzyme
- B. low ATP/ADP and decrease acetyl CoA/CoA inhibit inhibiting enzyme
- C. low NADH/NAD and decrease pyruvate concentration activate inhibiting enzyme
- D. Increased ATP/ADP and increased CoA/acetyl CoA inhibit activating enzyme

Answer : D

3. Which of the following correctly describes phosphorylation/dephosphorylation of PDH?

- Low ATP/ADP and Low acetyl CoA/CoA inhibits the inhibiting enzyme

4. An explanation for the no changes in mechanical capacity of heart even with increased oxygen consumption during utilization of fatty acids

- Increased oxidative stress caused by oxidation of fatty acids

5. Pyruvate dehydrogenase multienzyme complex is a key regulatory enzyme in glucose utilization: it can be inhibited by all of the following except?

- a. ATP/ADP
- b. NADH+H⁺+NAD⁺
- c. Acetyl CoA/CoA
- d. Citrate/pyruvate
- e. NADPH+H⁺/NADP⁺

Answer : E

CVS-Biochemistry **Lecture 1**

6. PFK-1 is catalyzing the conversion of fructose 6-phosphate into fructose 1,6-bisphosphate, all of the following can inhibit this enzyme except? Select one: a. decrease ADP/ATP ratio b. increase NADH+H⁺/NAD ratio c. decrease Activity of PI3 kinase d. increase Activity of electron transport chain e. decrease Activity of PFK-2

Answer : C

7. In the high altitude, you stayed for an hour, the following changes will happen in metabolic pathways of your cardiomyocytes except? Select one :

- a. increase Glycolysis
- b. decrease β oxidation of fatty acids
- c. increase production of phosphocreatine
- d. Accumulation of NADH+H and lactic acid
- e. decrease Oxidative electron transport chain activity

Answer : C



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Lecture2

Biochemistry of cardiac
muscle-2

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CVS-Biochemistry **Lecture 2**

1. Why can't the liver utilize the ketone bodies it produces?

Because it lacks one of the enzymes of ketolytic pathway

2. Why can't the liver utilize the ketone bodies it produces?

A) Because it lacks the necessary transport proteins to import ketone bodies into hepatocytes

B) Because it lacks one of the enzymes of the ketolytic pathway

C) Because it lacks the mitochondria required for ketone body oxidation

D) Because it lacks the cofactors necessary for the conversion of ketone bodies to acetyl-CoA

Answer: B

4. A patient presents to the emergency department with chest pain. Which of the following biomarkers would be MOST helpful in determining if the patient has experienced myocardial damage?

A) LDH

B) CK-MB

C) Myoglobin

D) ALT

Answer: B

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Lecture 3

Cholesterol

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Edit by

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CVS-Biochemistry **Lecture 3**

1. An important factor for regulating cholesterol synthesis is a regulatory element, which pair contains this factor?

- a. SREBP and SCAP
- b. SCAP and Insig-1

Answer : A

2. Phosphorylated PPI-1 is one of the enzymes that play a critical role in regulating cholesterol synthesis through the direct inhibition of the following enzyme?

Select one:

- a. Liver kinase B1
- b. Protein phosphatase 2C
- c. Protein kinase A
- d. Calcium calmodulin-dependent protein kinase kinase (caMKK)
- e. AMP activated kinase

Answer : B

3. In cholesterol synthetic pathway, which of the following coenzymes is serving as a hydrogen donor in the reactions catalyzed by HMG-COA reductase and squalene epoxidase? FW

Select one:

- a. NAD
- b. Pantothenic acid
- c. NADP
- d. Lipoic acid
- e. FAD

Answer : C

4. Prenylated proteins and Coenzyme Q can be produced in order from the following intermediates of cholesterol synthetic pathway? Select one

- a. Farnesyl pyrophosphate and HMG-COA
- b. Squalene and geranylgeranyl pyrophosphate
- c. Dimethylallyl pyrophosphate and 2,3 oxidosqualene
- d. Geranylgeranyl pyrophosphate and Farnesyl pyrophosphate
- e. Mevalonate 5 phosphate and mevalonate 5 pyrophosphate

Answer : D

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5. Cholesterol synthesis and ketogenesis, have the partial similarities, what are the sets of enzymes in the reaction in both?

- A. beta thiole HMG-CoA reductase
- B. HMG synthase, beta thiolase
- C. HMG lyase and HMG synthase

Answer: A

6. Cholesterol is important to steroidal hormone, what statement is correct?

- A. all from eukaryotic and prokaryotic
- B. the reductant in synthetic pathway is also important in oxidant / antioxidant reactions
- C. no long term regulation
- D. the intra cellular cholesterol targeted

Answer: B

7. An important factor for regulating cholesterol synthesis is the sterol regulatory element, which pair contains this factor

- A) SREBP and SCAP
- B) SCAP and Insig-1
- C) HMG-CoA reductase and SREBP
- D) Insig-1 and SRE
- E) SREBP and HMG-CoA reductase

Answer: A

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Lecture 4

Medical card

Name _____

Date of b _____

Gender _____

Address _____

Date of call _____

Corrected By :

SUJOOD ABUSROOR

1- The Integral protein of CM is?

ApoB-48

2) Dietary triglycerides Is ? **Chylomicrons**

3-Which of the following Lipoproteins best matches its description? Select one: MW

- a. Chylomicrons-> composed mainly of triglycerides synthesized in hepatic cells
- b. LDL> contains Apo-B48 and Apo-CII on its surface.
- c. VLDL-> migrates faster to anode than LDL during electrophoresis.
- d. HDL-> the major donor of free cholesterol to peripheral tissues.
- e. Lipoprotein (a)-> protects against thrombogenesis

ANSWER:C

4-Which of the following statements best describes chylomicron (CM) remnant? MW

Select one:

- a. Its size is larger than nascent CM.
- b. it contains high triglycerides content and low cholesterol concentration.
- c. Apo-E is the only protein present on its surface.
- d. It is enriched in cholesteryl ester and fat soluble vitamins.
- e. It is recognized by liver because they contain Apo-AI on its surface.

ANSWER:D

5-which one of the following statements concerning high density lipoprotein (HDL) metabolism is CORRECT? Select one: MW

- a. HDL is synthesized exclusively for intestine with Apo-C and Apo-E on its surface.
- b. It esterifies free cholesterol to cholesterol ester via cholesterol ester transfer protein (CETP).
- c. Cholesterol ester of HDL is selectively taken up by liver cells via scavenger receptors-B1.

ANSWER:C

6-Which of the following mechanisms mainly explains atherosclerosis in familial hyperlipoproteinemia (broad beta; type III)? FW

Select one:

- a. Improper removal of VLDL remnants and chylomicron remnants from circulation.
- b. Deletion of ABC-A1 transporters that leads to cholesterol accumulation within blood cells.
- c. High blood level of free cholesterol due to defective Apo-A1.
- d. Increased triglycerides in blood due to defect in its hydrolysis by lipoprotein lipase.
- e. High level of Triacylglycerol due to mutation of microsomal transfer protein (MTP)

ANSWER:A

7-What is the cardiac biomarker that remains elevated for the longest time?

LDH

8-Lipoprotein lipase breaks down TG in VLDL, what apoprotein acts as a catalyst for this enzyme?

Apoprotein CII

9- What is the HDL receptor in the liver?

Scavenger receptor class B

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Lecture 6

Cardiac biomarkers

Done by

Zaid frahat

CVS-Biochemistry **Lecture 6**

A patient presents to the emergency department with chest pain. Which of the following biomarkers would be MOST helpful in determining if the patient has experienced myocardial damage

- A) LDH
- B) CK-MB
- C) Myoglobin
- D) ALT

Answer: B

Which cardiac biomarker typically remains elevated for the longest duration, often detectable even after one week following myocardial infarction (heart attack)

- A) Myoglobin
- B) CK-MB (Creatine Kinase-MB)
- C) Cardiac Troponin I or T
- D) Creatine Kinase (CK)
- E) Lactate Dehydrogenase (LDH)

Answer: C

Which of the following cardiac biomarkers is now considered relatively obsolete due to the availability of more sensitive and specific alternatives

- A) LDH (Lactate Dehydrogenase)
- B) Myoglobin
- C) CK-MB (Creatine Kinase-MB)
- D) Troponin
- E) BNP (B-type Natriuretic Peptide)

Answer: A