

# CNS-Biochemistry

## Archive

## Lecture 2

### Brain Energy Metabolism II

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note :  
it includes the same questions of  
previous lecture with few questions  
on the 2<sup>nd</sup> one.

# CNS-Biochemistry **Lecture 2**

1. One of the following is not correct ?

- a. the uncoupling between O<sub>2</sub> and glucose in brain tissue indicates that not all glucose taken up will be consumed in aerobic respiration for energy generation
- b. circulating lactate can be used as energy substrates in brain
- c. neuronal cells can form lactate from pyruvate in reversible reaction catalysed by lactate dehydrogenase
- d. Astrocytes store small amount of glucose as glycogen
- e. GLuT 1 55KDa isoform is localized on endothelial cells of blood brain barrier

ليش C؟ لانها وظيفة الـ Astrocytes مش الـ neuronal cells و الـ astrocytes تعتبر nonneural

Answer : C

3. The RQ of the brain is \_\_\_, which strongly confirms that \_\_\_?  
Select one:

- a. 1, the main substrate of the brain is lactate
- b. 1, the main substrate of the brain is glucose

Answer : B

5. The junction between two communicating neurons is ?

- a. Synapse
- b. Neuromuscular junction
- c. Dendrite
- d. Axon
- e. Receptor

Answer : A

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6. How does the neurotransmitter produce a signal in the postsynaptic cell ?

- a. Binding to post-synaptic receptor
- b. Binding to pre-synaptic receptor
- c. Binding to auto-receptor

Answer : A

7. Postnatal development of BBB ?

- A. astrocyte
- B. pericyte
- C. astrocyte + pericyte
- D. microglial

Answer : C

8. Not found in cerebral tissue ?

- 1)HMG-CO synthase
- 2)glucose
- 3)SCOT
- 4)lactate

Answer : A

9. Cerebral tissue / Brain (utilize/consume) ..... Of total body glucose utilization ?

- a. Quarter
- b. Two quarter
- c. Third
- d. Half

Answer : A

10. Which of the following does not happen in brain ?

- a) pyruvate convert to lactate
- b) pyruvate convert to acetyl-COA
- c) lactate convert to pyruvate
- d) glucose phosphorylation to G6P
- e) G6P dephosphorylation to glucose

Answer : E

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11. In breastfed neonates the primary and main source of energy is numerous?

- A- glucose only B- ketone body C- glucose, acetoacetate, B hydroxybutyrate D- mannose

Answer : C

12. All of the following are true about the fate of excess 4.4 mmol of glucose, EXCEPT ? a.

- a. Synthesis of glycogen in neuron  
b. Utilized in the synthesis of glutamate  
c. Utilized in the synthesis of GABA

Answer : A

13. All of the following are true about the fate of excess 4.4 mmol of glucose, EXCEPT ?

- a. Component of BBB  
b. Utilized in the synthesis of brain neurotransmitters

Answer : A

14. Which GLUT protein is specific for neurons ?

answer : GLUT3

15. More than 70% of ATP molecules generated in brain tissue are consumed in ?

answer : pumping ions actively against their concentration gradients by Na<sup>+</sup>/K<sup>+</sup> ATPase pump

16. What is the most energy-consuming process in the brain ?

- a. Restoring ionic gradient across the plasma membrane after excitation  
b. Passive transport of Na<sup>+</sup>/K<sup>+</sup> pump

Answer : A

اللهم بارك لنا في أوقاتنا وأعجارتنا، ووقفنا لجا فيه  
خير لنا ولأمتنا، وارزقنا هممة لا تفتر وعزما لا يلين،  
وانصر أهلنا في غزوة نصرًا عزيزًا مؤزرًا، وافتح لنا  
أبواب النجاح والتوفيق برحمتك يا أرحم الراحمين.