

23/25

NUTR 6106
Quiz 1, Feb 10, 2014

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Total Points: 25

- 1) Glucose is reabsorbed in this part of nephron
 - a) Proximal tubule
 - b) Loop of Henle
 - c) Distal tubule
 - d) Collecting duct

2) Write two differences between water soluble vitamins and fat soluble vitamins in terms of absorption, storage, and excretion.

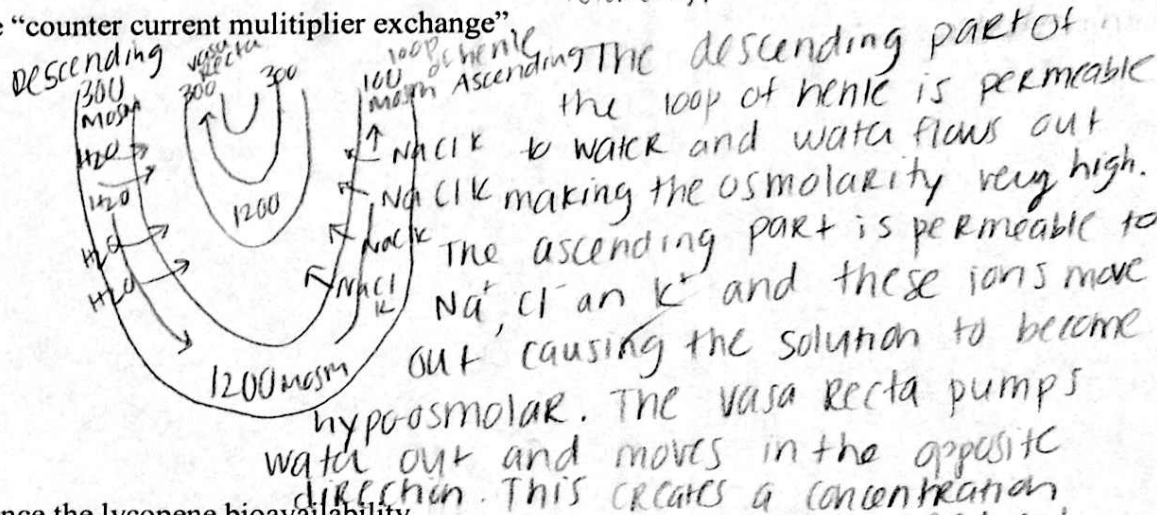
Water soluble cannot be stored. They are excreted out and are hydrophilic. Fat soluble are stored in the body in adipose tissue. Vitamin A can be stored in the liver and too much vitamin A can lead to cirrhosis. Fat soluble vitamins use chylomicrons for absorption. Lipophilic. Water soluble vitamins serve as coenzymes in reactions, and fat soluble vitamins do not.

3) Measure of the osmoles of solute per kilogram of solvent is known as osmolality (2 points).

4) EER is the midpoint of +/- 2 standard deviations range for determining an individual's energy requirement

TEE EER REE
total energy expenditure

5) Briefly, explain the "counter current multiplier exchange"



6) What factors influence the lycopene bioavailability.

- ① If you crush it into smaller pieces (it's in tomatoes)
- ② If you heat it - like in tomato sauce
- ③ If you add fat such as olive oil - since it is fat soluble bioavailability will increase

vessel
constrict
when BP is low
and fluid is
low

7) Explain the role of vasopressin in water balance regulation.

vasopressin (ADH) is released from the supraoptic neuron in the hypothalamus. It acts on the collecting duct in the kidney and causes water retention, sodium reabsorption and vasoconstriction. This hormone works in conjunction with aquaporin 2 which is hormone sensitive. When the body needs to conserve water ADH is released. When the body needs to get rid of water the hormone is not active, and excretion occurs.

8) What are the 2 steps in the activation of dietary vitamin D?

Vitamin D₂ or D₃ is first hydroxylated in the liver via 24-hydroxylase to form 25(OH) vitamin D. This is the form tested in serum. Next 25(OH) vitamin D undergoes a second hydroxylation in the kidney via 1 α hydroxylase to form 1-25(OH)₂ vitamin D - also called active vitamin D

9) What is the structural difference between retinol and beta-carotene?

Retinol is an alcohol. Beta carotene has two beta ionone rings. Retinol has an OH group. Both have vitamin A activity. Beta carotene comes from plants and is less available than retinol which comes from animals.

10) Zeaxanthin is converted to vitamin A in the liver (True/False).

no A activity