Topic 18. Digestion of Proteins. Common pathways of amino acid metabolism.

Theoretical questions:

1. Digestion of proteins.
   1.1. Digestion of proteins in stomach. Role of hydrochloric acid in protein digestion.
   1.2. Activation of proteolytic enzymes of pancreas in intestine. Digestion of proteins and peptides in intestine with endopeptidase and exopeptidase.
2. Ways of formation and maintenance of the pool of free amino acids in the human body.
3. Deamination of amino acids:
   3.1. Definition of deamination.
   3.2. Types of deamination.
   3.3. The oxidative deamination of glutamate.
   3.4. Transamination of amino acids: reactions, biological significance.
   3.5. The diagnostic value of the activity of aspartate aminotransferase (AST) in blood serum.
   3.6. The diagnostic value of the activity of alanine aminotransferase (ALT) in blood serum.
4. Decarboxylation of amino acids: enzymes, the physiological significance.
   4.1. The formation of physiologically active compounds - biogenic amines (γ-aminobutyric acid, histamine, serotonin, dopamine), and catecholamine (norepinephrine, epinephrine)
   4.2. Inactivation of biogenic amines.

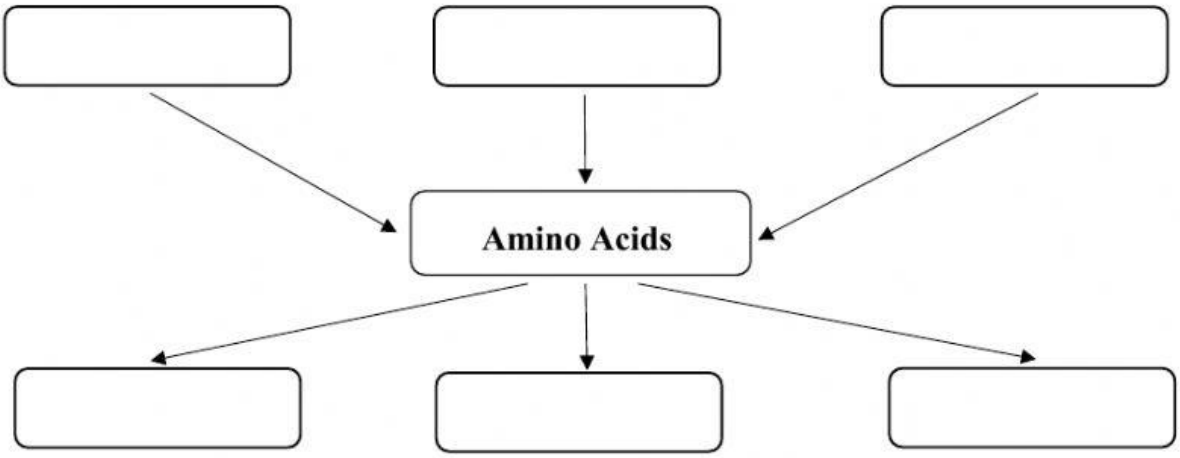
Study Questions and Tasks

1. **Digestion of proteins.**

Location in Digestive Tract	Enzymes	Substrates	Products
In stomach			
In small intestine			

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2. Ways of formation and maintenance of the pool of free amino acids



3. Deamination of amino acids.

3.1. Deamination is

_____
_____
_____
_____

3.2. Types of deamination:

1._____
_____
2._____
_____

3.3. Write down the reaction of oxidative deamination of glutamate:

3.4. Transamination is

_____
_____
_____
_____

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3.5. Write down the alanine aminotransferase (ALT) reaction:

3.6. Write down the aspartate aminotransferase (AST) reaction:

4. Decarboxylation of amino acids.

4.1.Decarboxylation is

_____
_____
_____
_____

4.2.Formation of biogenic amines:

A. *γ-aminobutyric acid*

B. *Histamine*

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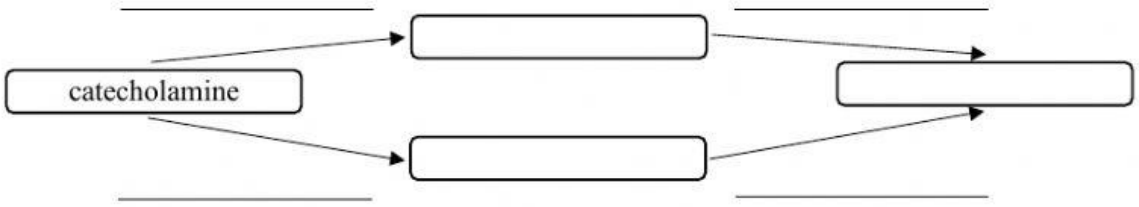
C. *Serotonin*

D. *Dopamine*

E. *Norepinephrine*

F. *Epinephrine*

4.3.Inactivation of biogenic amines. Write down the schemes of catecholamine degradation:



Textbooks:

1. Biochemistry 5th Edition Ch.19, pp.245-252, Ch.21, pp.285-287.
2. Prasad textbook of biochemistry OCR. Topic 12. pp. 248-253, pp.289.

LIVEWORKSHEETS