**Lesson 15 – Protein Digestion.**

**1. Classification of proteins**

What is protein? What is the structure of proteins?

What are the essential and nonessential amino acids?

 What are complete proteins and incomplete proteins? What foods contain complete proteins?

 **2. Protein digestion**

What is gastric juice? What is pancreatic juice?

Where is HCl formed? What are the functions of HCl?

What is protease? Why protein digesting enzymes are secreted in a zymogen form?

How are proteases classified?

Fill in the table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Enzyme | Zymogen (precursor) | How is the zymogen activated? | Where is the enzyme produced? | Where does the enzyme work? | Substrates | Products | What bonds does enzyme break? |
| Pepsin |  |  |  |  |  |  |  |
| Enteropeptidase |  |  |  |  |  |  |  |
| Trypsin  |  |  |  |  |  |  |  |
| Chymotrypsin |  |  |  |  |  |  |  |
| Elastase |  |  |  |  |  |  |  |
| Carboxypeptidase |  |  |  |  |  |  |  |
| Aminopeptidase  |  |  |  |  |  |  |  |
| Dipeptidase |  |  |  |  |  |  |  |

What is the end product of protein digestion?

How are amino acids absorbed in the intestine? Which vitamin helps in absorption of amino acids?

**3. Situational tasks**

1. In African countries, children receive predominantly plant foods associated with a particular culture (mono-diet). At the same time, edema, anemia, muscular dystrophy, delayed growth and development, light skin color, and frequent infections are often observed.

a. What is kwashiorkor?

b. Why does the mono-diet lead to kwashiorkor?

c. Explain why muscular dystrophy, delayed growth, edema and anemia are observed in kwashiorkor?

2. The enzyme pepsin is able to cleave the peptide bonds of proteins.

a. What class of enzymes does pepsin belong to?

b. Why does pepsin inactivate many enzymes?