**Lesson 7 – Carbohydrates. Digestion. Glycogen metabolism**

**1. Classification of carbohydrates**

Fill in the table

|  |  |  |
| --- | --- | --- |
| Type | Definition | Examples |
| Monosaccharides  1. Aldoses a. Trioses  2. Ketoses b. Tetroses  c. Pentoses  d. Hexoses |  |  |
| Disaccharides |  |  |
| Oligosaccharides |  |  |
| Polysaccharides  1. Homopolysaccharides  2. Heteropolysaccharides |  |  |

**2. Carbohydrates digestion**

Fill in the table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Enzyme | Enzyme class | Where is the enzyme produced? | Where does the enzyme work? | Substrates | Products | What bond is broken by the enzyme? |
| Salivary amylase |  |  |  |  |  |  |
| Pancreatic amylase |  |  |  |  |  |  |
| Maltase |  |  |  |  |  |  |
| Sucrase |  |  |  |  |  |  |
| Lactase |  |  |  |  |  |  |

**3. Glycogen metabolism**

What is the structure of glycogen? What is the function of glycogen?

What is the glycogenesis? What is the glycogenolysis? Where are these processes located?

What is difference between glycogenolysis in muscle and in liver?

What is difference between hexokinase and glucokinase?

Fill in the table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Enzyme | Enzyme class | Substrates | Products | What happens in the reaction? | How many ATP molecules are produced/used in the reaction? | Regulation |
| Glycogenesis | | | | | | |
| Hexokinase or  Glucokinase |  |  |  |  |  |  |
| Phosphoglucomutase |  |  |  |  |  |  |
| UDP-glucose pyrophosphorylase |  |  |  |  |  |  |
| Glycogen synthase |  |  |  |  |  |  |
| Amylo-(1,4→1,6)-transglycosylase |  |  |  |  |  |  |
| Glycogenolysis | | | | | | |
| Glycogen phosphorylase |  |  |  |  |  |  |
| Debranching enzyme (glucan transferase, alpha-1,6-glucosidase) |  |  |  |  |  |  |
| Phosphoglucomutase |  |  |  |  |  |  |
| Glucose-6-phosphatase |  |  |  |  |  |  |