**Lesson 9 – Pentose Phosphate Pathway. Blood sugar.**

**1. Pentose Phosphate Pathway**

What are the functions of oxidative pentose phosphate pathway?

What is the fate of the products of the pentose phosphate pathway?

In what tissues is the pentose phosphate pathway active?

What is the main purpose of pentose phosphate pathway activity in adipose tissue?

Why is the pentose phosphate pathway more active in cells that are dividing?

Fill in the table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Enzyme | Enzyme class | Substrates | Products | What happens in the reaction? | Regulation |
| Oxidative phase |
| [Glucose 6-phosphate dehydrogenase](https://en.wikipedia.org/wiki/Glucose_6-phosphate_dehydrogenase) |  |  |  |  |  |
| [6-phosphogluconolactonase](https://en.wikipedia.org/wiki/6-phosphogluconolactonase) |  |  |  |  |  |
| [6-phosphogluconate dehydrogenase](https://en.wikipedia.org/wiki/6-phosphogluconate_dehydrogenase) |  |  |  |  |  |
| Non-oxidative phase |
| [Ribose-5-phosphate isomerase](https://en.wikipedia.org/wiki/Ribose-5-phosphate_isomerase) |  |  |  |  |  |
| [Ribulose 5-Phosphate 3-Epimerase](https://en.wikipedia.org/wiki/Phosphopentose_epimerase) |  |  |  |  |  |
| [Transketolase](https://en.wikipedia.org/wiki/Transketolase) |  |  |  |  |  |
| T[ransaldolase](https://en.wikipedia.org/wiki/Transaldolase) |  |  |  |  |  |
| [Transketolase](https://en.wikipedia.org/wiki/Transketolase) |  |  |  |  |  |

**2. Regulation of blood sugar**

What is the normal level of glucose in the blood?

What is hyperglycemia? What are the causes of hyperglycemia?

What is hypoglycemia? What are the causes of hypoglycemia?

What hormones increase blood glucose?

Fill in the table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Pathway | Glycolysis | Gluconeogenesis | Glycogenolysis | Glycogenesis | Pentose Phosphate pathway |
| Definition |  |  |  |  |  |
| Location |  |  |  |  |  |
| Does the process increase or decrease blood glucose? |  |  |  |  |  |
| How does insulin affect the process? |  |  |  |  |  |
| How does glucagon affect the process? |  |  |  |  |  |