

## **ABSTRACT**

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**Title of diploma thesis:** Copper and its pato/physiological importance in human organism

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Copper is an indispensable trace element of our organism. This thesis summarizes the current knowledge about copper, its role in the human body and diseases connected with copper dysbalance.

The first part of the thesis deals with the physiological aspects. Functions of copper in the body are described here in detail, in particular the structure and properties of copper-containing enzymes – so-called cuproenzymes. The next section summarizes the current knowledge of the kinetics of copper in the body at the cellular and whole-body levels, including interactions with other trace elements. Details are also presented for each of the factors involved in the homeostasis of copper in the human organism.

The second part of the thesis deals with patophysiology of copper. It is focused on the most important diseases that are directly linked to disorders of copper homeostasis in the organism. The greatest emphasis is given mainly on two of them – Wilson's disease and Menkes disease. The former is associated with an excess of copper in the body while the latter leads to a deficiency of copper. Both diseases are thoroughly characterized including causes, clinical manifestations, diagnostic and therapeutic methods. The last part of the thesis further describes additional neurodegenerative diseases, also related to a disorder of copper homeostasis in the body.