

## **ABSTRACT**

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**Title of Thesis:** Copper chelating activity of flavonols

Copper belongs to essential trace elements. It is involved in different biological processes essential for life therefore metabolism disorders of copper can give rise to pathological displays. A raised level of loose copper in serum at some diseases arouses a great interest in the „chelating“ therapy and the study of new potential chelators.

The importance of chelation is based on the maintenance of copper homeostasis and the elimination of its abundance. It serves the intoxication therapy of copper and other heavy metals and the treatment of Wilson´s disease.

Flavonoids are polyphenolic compounds with antioxidant effects. Flavonoids able to chelate some metal ions through which they reduce the possibility of the production of a hydroxyl radical which decrease the effect of oxidative stress on organism. The possible use of the „chelating“ therapy with flavonoids is investigated also at cardiovascular and neurodegenerative diseases, the occurrence of cancer and the inflammation.

This diploma thesis was focused on discovering chelating activity of flavonols: 3-hydroxyflavone, kaempferol, quercetin, morin, myricetin, rutin, troxerutin with  $\text{Cu}^{2+}$  ions by hematoxylin at different pH using spectrophotometry.

Defining of the structure-activity relationship of a flavonoid and a chelating potential, the influence of 4-oxo group and hydroxyl groups on chelating activity was discovered. The highest chelating activity was discovered at myricetin, quercetin and morin. On the contrary the lowest activity had rutin and troxerutin.

**KEYWORDS:** Flavonols, Chelating activity, Copper, Hematoxylin, Antioxidants