## Abstract

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**Title of Thesis:** Interaction of chalcones with transition metals I.

Iron is a biogenic metal element with unpaired d-electrons that plays a key role in the survival of unicellular organisms, plants and mammals. The electron shell of the iron atom is able to easily bind and release electrons and thus contribute to the proper function of the organism. Iron is necessary to ensure the transport of respiratory gases, cell differentiation and the functioning of some specific enzymes. However, despite the clearly positive effect of iron on human health, inappropriately low or high level of iron in the body can cause the development many diseases.

Chalcones are plant polyphenols belonging to the family of flavonoids, secondary metabolites of plants. The term chalcone generally refers to a chemical structure with an α,β-unsaturated ketone system based on 1,3-diphenylprop-2-en-1-on. These substances have a wide spectrum of biological activities and in the right amount can be good for human health. The aim of this diploma thesis was to monitor the iron-chelating and iron-reducting activity of selected chalcones: isoliquiritigenin, licochalcon A, phloretin, phlorizin and naringin dihydrochalcon neohesperidin dihydrochalcon. The measurements were performed in an environment with different pH (4,5; 5,5; 6,8 and 7,5), using a spectrophotometer. At the end of this thesis, the relationship between structure and effect was determined.

The most effective chelator of all tested substances was chalcone isoliquiritigenin extracted from the root and rhizomes of *Glycyrrhiza glabra* L., *Glycyrrhiza uralensis* Fisch.

and *Glycyrrhiza inflata* Batalin. At the same time, this substance did not show any undesired iron-reducting activity. The second most chelating agent was florizin, which also has a high iron-reducting activity.

**Keywords:** iron, chalcone, chelation, reduction