ABSTRACT

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Title of Thesis: Comparison of interactions of equol and desmethylangolensin with iron and copper

Iron and copper are essential trace elements, which are important for our body. Both elements have a significant effect on the correct function of organs and make part of many enzymes. They are able to accept or donate electrons - conversion between oxidized (Fe^{3+}, Cu^{2+}) and reduced (Fe^{2+}, Cu^{+}) forms. If these metals are excess in organism, they are accumulated in the cells and mediate the creation of free radicals, that destroy cell structures. This deficiency is treated with chelators, which facilitate the excretion of metals from the body.

Isoflavonoids are polyfenolic substances, which can have antioxidant effects and they are involved in the scavening of free radicals. Isoflavonoids can have also a pro-oxidative effect, because they are able to reduce metal ions.

In this study were tested interactions (chelation and reduction) between the metabolites of isoflavonoids (equol and desmethylangolensin) and ions of iron and copper. Both metabolites only weakly chelate metal ions, but they significantly reduce cupric ions.

KEYWORDS: Iron, Copper, Metabolites of isoflavonoids, Chelation, Reduction