

# ABSTRACT

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**Title of thesis:** Iron-chelating properties of fruit extracts of various elderberries

Inorganic iron is the major food source of iron in humans. It plays role in many biochemical reactions. Thus, iron metabolism disorders can lead to different diseases associated with lack of iron or iron overload. One of the possible treatment modalities of the latter represents the administration of iron chelators.

Elderberry, *Sambucus nigra* L. (Adoxaceae), has been used in traditional medicine. The fruits of elderberry are a rich source of cyanidin-based anthocyanins as the main component. There are important differences, both in chemical and physical properties between several cultivars of elderberry. Anthocyanins might interact with metals in the gastrointestinal tract by formation of chelates. However, data on metal interactions with anthocyanins are sparse. The main aim of this study was to perform the analysis of interaction of iron with elderberry fruit extracts as a rich and cheap source of anthocyanins with cyanidin as the aglycon.

In this *in vitro* study ten elderberry fruit extracts were tested for iron chelating activities under different (patho)physiologically relevant pH conditions. Spectrophotometric method based on ferrozine as an indicator was used for the quantitative comparison.

All extracts were able to chelate iron, however, there were marked differences between extracts from different varieties which might be transformed in dissimilar biological effect. It was found that chelation activity of all tested extracts was increased with increasing pH. The extract of 'Haschberg' was the most potent iron chelator, both of ferrous and ferric ions.

**KEYWORDS:** elderberry, extract, fruit, anthocyanin, cyanidin, chelation, iron