

## 18. IRON-CHELATING ACTIVITY OF POLYPHENOLIC EXTRACTS OF SOME PLANTS FROM THE REPUBLIC OF MOLDOVA

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**Introduction.** Haemochromatosis is a condition of iron accumulation in the body to a toxic level, caused by a genetic disorder of the proteins involved in regulating iron absorption or due to multiple iron transfusions in chronic anemia. This condition is associated with numerous health problems: heart failure, cirrhosis of the liver, fibrosis, diabetes, arthritis, infertility, and cancer. Plants rich in polyphenolic compounds could act as sources of natural chelators, as they have a greater ability to chelate with metallic iron, forming soluble, stable complexes that can be excreted.

**Aim of study.** Determination of the chelating activity of some medicinal plants to find alternative sources for the treatment of diseases caused by excess iron.

**Methods and materials.** The polyphenolic extracts were obtained from plant material of plants introduced into the cultivation in the Republic of Moldova: *Origanum vulgare* ssp. *vulgare* L., *O. vulgare* ssp. *hirtum* (Link) Ietswaart, *Hyssopus officinalis* L., *Hypericum perforatum* L. The total phenolic contents of dry extracts were quantified using the Folin-Ciocalteu method. The chelating effect on ferrous ions was determined according to Dinis et al. (1994) method with few changes. Ferrozine can quantitatively form complexes with  $Fe^{2+}$ . However, in the presence of chelating agents, the complex formation is disrupted with the result that the red color of the complex is decreased. The absorbance of the analyzed samples was recorded at 562 nm against the blank, EDTA (ethylenediaminetetraacetic acid) was used as a positive control.

**Results.** Polyphenolic extracts were obtained with 70% ethanol by fractional maceration with agitation from vegetal products (*Hyperici flores*, *Origani herba*, *Hyssopi herba*) collected from the collections of the IGPhPP and the SPCFMP. The ethanolic extract of *Hyperici flores* is characterized by a high level of phenolic compounds 105,918 mg GA/g, and in the ethanolic extracts obtained from the aerial parts of the studied aromatic plants the total polyphenol content varies between 39,056-68,500 mg GA/g. The results showed that *H. perforatum* flowers extract (45,7%) and extract from *O. vulgare* ssp. *hirtum* (39,2%), *O. vulgare* ssp. *vulgare* (37,3%), *H. officinalis* (32,5%) aerial parts had lower iron-chelating activity compared to EDTA (99,03%) – standard iron chelator.

**Conclusion.** In this study, all extracts showed different metal chelating activity, but the extract from the flowers of *H. perforatum* showed the greatest activity and can be considered as an effective source of chelating iron for further research.