

Essential oils and hydrolates from selected plants – chemical composition and biological activities

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Abstract

In the literature part of the work hydrolates are discussed. This subject cannot be addressed without mentioning the essential oils. A historical outline, hydrolates parameters, methods of determining their composition and biological properties are presented. Subsequently, the characteristics of sweet gale (*Myrica gale* L.), hyssop (*Hyssopus officinalis* L.), incense cedar (*Calocedrus decurrens* (Torr.) Florin) and four species of goldenrod: Canadian goldenrod (*Solidago canadensis* L.), giant goldenrod (*Solidago gigantea* Aiton), European goldenrod (*Solidago virgaurea* L.) and hybrid of Canadian goldenrod and European goldenrod (*Solidago x niededereri*). The current literature reports concerning the subject of this work i.e. hydrodistillation products obtained from listed plants are also presented.

The research part focuses on examining and describing the composition of steam-distillation products: essential oils and hydrolates from selected plants from Poland. One chapter was devoted to each of the discussed plants. The composition of essential oils obtained by distillation in laboratory and / or industrial conditions as well as the composition of hydrolates and their fractions was determined. The leaves and flowers of sweet gale, hyssop herb, cetin of incense cedar and two species of goldenrod (Canadian goldenrod and giant goldenrod) were examined. The exception is the last chapter, in which the essential oils of leaves and flowers of Canadian goldenrod, European goldenrod and their hybrid were compared.

Selected biological properties of individual products were also assessed. The antimicrobial activity of the industrial sweet gale leaf oil and hydrolate was tested by determining the MIC and MBC values for the essential oil and the viability of microorganisms in the presence of the hydrolate at various concentrations. The phytotoxic activity of hyssop oil was also determined by examining its effect on the germination and initial growth of spring wheat (*Triticum aestivum* L. cv Harenda and Blondynka) and white mustard (*Sinapis alba* L.).