PLANT EXTRACTS FOR COSMETIC PURPOSES

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ABSTRACT

The literature part of the work deals with the subject of cosmetics, including natural cosmetics as well as the ecological aspects of their production. The functions and ingredients of plant cosmetic extracts were discussed in detail. The characteristics of saponins and polyphenols in terms of their structure and potential use in the cosmetics industry were presented. The characteristics of the goldenrod species (*Solidago*) growing in Poland were also discussed. Their occurrence, morphology and description of active ingredients, including in particular saponins and polyphenols, were taken into account.

The research part of the work presents analysis of 57 plant materials occuring in Poland for the presence of saponins and polyphenols. A detailed analysis of five species of goldenrod – *Solidago virgaurea*, *S. canadensis*, *S. gigantea*, *S. graminifolia*, as well as hybrid of *S. virgaurea* and *S. canadensis*, *S.* × *niederederi* – has been carried out. Determining the qualitative and quantitative composition of saponins and polyphenols using the UPLC method and assessing the foam formation, surface activity and antioxidant activity were important research points.

The main part of the research concerned obtaining extracts from leaves and flowers of *S. canadensis*, selected on the basis of the analysis of plant materials. Initial attempts were made to assess the impact of the pulsed electric field on the efficiency of extraction of plant material. Glycerine-water and glycol-water extracts were prepared as the most common forms of extracts on the market. Next, after optimization of the extraction process with methanol, dry extracts were obtained. Due to the thick, dense consistency of the dry extracts, they were spray-dried on various carriers. Trehalose with the addition of sodium alginate was selected as the most preferred carrier, and powder extracts of *S. canadensis* leaves and flowers were prepared with its use.

The glycerin-water, glycol-water and powder extracts of *S. canadensis* leaves and flowers were compared in terms of foam formation and surface activity, as well as the content of polyphenols and antioxidant activity.

The final part of the research was to prepare two types of cosmetics – a nursing cream and a washing gel – with glycerin and powder extracts from *S. canadensis* leaves and flowers, and to perform physicochemical tests and accelerated aging tests for them.