

MACSKAKAROM KIVONATOK HATÓANYAGTARTALMÁNAK OPTIMALIZÁLÁSA KAPCSOLT MŰVELETEKKEL

CONTROLLING CONCENTRATIONS OF ACTIVE COMPONENTS OF CAT'S CLAW BASED PRODUCTS BY HYBRID SEPARATION PROCESSES

Székely E.¹, Keve T.², Calvo A.¹, Kószó B.¹, Sanz S.², Dévényi D.¹, Kormos N.¹

¹ *Department of Chemical and Environmental. Process Engineering, Budapest University of Technology and Economics, Budapest, Hungary*

² *Gradiens Ltd., Perbál, Hungary*

³ *Valladolid University, Valladolid, Spain*

The most popular and applied method of plant based products involve at least one extraction step. The extracts are preferably rich and concentrated in the desired active components as well as easy to handle during the further steps of the process. Water and organic solvents have been typically used. Supercritical fluids, and namely supercritical carbon dioxide, are a more environmentally friendly alternative to extract target components from plant matrices.

Supercritical fluid extraction (SFE) with and without entrainer, and other acceptable solvent extractions (water, ethanol, acetone, hexane, ethyl acetate) were used for fractionation of bioactive products as alkaloids and triterpenes from cat's claw (*Uncaria tomentosa* (Willd.) DC.) bark. The extracts from this plant have a number of beneficial effects, including anti-inflammatory or immune stimulator. [1] However, dietary supplements based on cat's claw are restricted in some European countries due to its oxindole alkaloids. The aim of this work was to obtain fractions of enriched and limited alkaloid concentrations and meanwhile map the possibilities to obtain more than one valueable products from the raw bark.

A two-step process was developed, consisting of a hydro-alcoholic extraction and SFE with carbon dioxide (scCO₂). Composition of the product extracts were evaluated if after the hydro-alcoholic extraction of the bark supercritical fluid extraction was performed on the hydro-alcoholic extract, and if after the supercritical fluid extraction the residue was extracted by water-alcohol solvent. HPLC results showed a high selectivity for the alkaloids in extracts obtained with scCO₂ modified with ethanol. The concentration of alkaloids in the extract obtained by the two-step process at the selected conditions was 50 mg total alkaloids/g extract, with a very low concentration in the residue. Alkaloid concentrations and yields of the extracts obtained by a hydro-achoholic extraction of a supercritical residue and those of residues after supercritical extraction of the hydro-alcoholic extracts were comparable, thus technological order might be decided by economic measures.

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[1] Falkiewicz B., Łukasiak J.: *Case Reports and Clinical Practice Review* **2** 305-316 (2001)