

Extraction of Calendula using supercritical CO₂

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1 INTRODUCTION

Calendula officinalis is an annual or perennial herbaceous plant in the daisy family Asteraceae, native to the Mediterranean region. The plant is 30-50 cm high and attracts attention by its yellow to orange florescence in June to October. Especially the flowers of the plant are important for cosmetic and pharmaceutical applications.

The paper presents the benefits and performance extracting dried calendula flowers using supercritical CO₂.

2 SUMMARY

Pharmaceutical significant ingredients of the flowers are especially triterpene faradiol- esters and carotenoids. Traditionally these components are extracted by a classical maceration process using solvent mixtures of water and ethanol. The extracts are intermixed to e.g. creams and distinguish by anti-inflammatory properties and support of the natural wound healing.

In collaborations with the company UNIFARCO and the University of Padova NATECO₂ performed a CO₂ extraction process of calendula flowers. By optimized preparation of the material and adjusted parameters high yields of extracts and active substances could be achieved. Quantitative analyses of active compounds in the extracts were obtained by HPLC-MS measurements. Also two fractions of extracts are produced by regulating the conditions step by step (fig. 1).

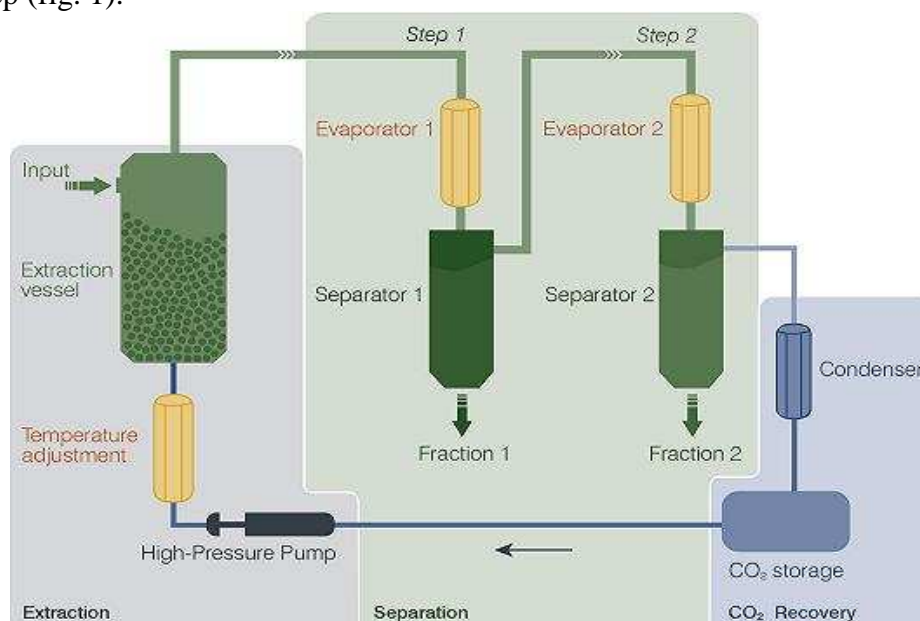


Fig. 1: Technical chart of a CO₂-extraction plant for calendula

3 CONCLUSIONS

The extraction of calendula with CO₂ is a highly effective process. The paper shows evidence by presenting the resulting concentration of the active compounds in different extracts. The content of faradiol-esters in the CO₂ extracts excels significantly in comparison to traditionally produced extracts.