

## Supercritical Marigold Flower CO<sub>2</sub>-Extract - Evergreen in Evidence Based Cosmetic Application

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### Abstract

Marigold (*Calendula*) has gained increasing attention in recent years due to new scientific evidence of the old well-known healing forces of the plant in dermatological and cosmetic applications. Supercritical CO<sub>2</sub>-extraction proves state-of-the-art technology for producing highly active *Calendula* extracts. The pentacyclic triterpene alcohols such as faradiol-3-monoesters and monols such as taraxasterols are important marker ingredients and have been identified as the anti-inflammatory principles which are especially enriched by CO<sub>2</sub>-extraction. The *Calendula* CO<sub>2</sub>-extract thus delivers the base for active and well standardised cosmetic preparations especially for ointments which have a long tradition in the self-medication of skin diseases and in cosmetics. In contrast to other asteraceae, marigold does not contain sesquiterpene lactones which might have a sensitising potential.

### Introduction

Marigold (*Calendula officinalis* L.) – not to be confused with tagetes – is an annual unpretentious plant of 30-60 cm height, growing wildy or cultivated in Mediterranean countries, North Africa, Asia, North and Middle America. The active parts are the yellow to dark orange flowers which can be harvested during the whole summer season.



Figure 1a. *Calendula officinalis*

The marigold flower, along with the arnica and the chamomile flower, is one of the best known medical plants. All three belong to the same asteraceae plant family and have similar physiological properties but *Calendula*, in contrast to the other Asteraceae flowers does not contain any sesquiterpene lactones which may cause allergies. Among the various species of the genus *Calendula*, only *Calendula officinalis* and *C. arvensis* are used worldwide, mainly the *officinalis* variety.

The therapeutic use of *Calendula* flowers and ointments goes back at least to Hildegard von Bingen in the 12th Century and it has been mentioned in many popular medical books for almost a hundred years<sup>(1,2)</sup>.

The plant is listed in many Pharmacopoeias such as European Pharmacopoeia, British Herbal Pharmacopoeia, German Pharmacopoeia, U.S. Pharmacopoeia and in the German Commission E and European Scientific Co-operative on Phytotherapy (ESCOP) monographs. Indications are inflammations of the skin and oral mucosa, wound healing and antimicrobial activity, especially in ointments for medical cosmetics and skin care products. Health Canada lists *Calendula* in the Health Products Category.



Figure 1b. *Calendula officinalis*