

ESSENTIAL OIL CONTENT IN FLOWERS FROM *ROSA CENTIFOLIA* HARVESTED IN DIFFERENT PHENOPHASES

Miroslav Habán^{1,2}, Veronika Žitniak Čurná^{2*}, Joanna Korczyk-Szabó²,
Michaela Magáčová¹, Marta Habánová²

¹Faculty of Pharmacy, Comenius University in Bratislava,
Odbojarov 10, 83232 Bratislava, Slovak Republic

²Faculty of Agrobiography and Food Resources, Slovak University of Agriculture in Nitra,
Tr. Andreja Hlinku 2, 94976 Nitra, Slovak Republic

*e-mail: veronika.curna@uniag.sk

Abstract

Rosa centifolia L. with common name cabbage rose (*Rosaceae*) is perennial plant that is known as hundred-leaved rose. It is a complex hybrid rose, bred from *Rosa gallica* L., *Rosa moschata* Herrm., *Rosa canina* L., and *Rosa damascene* Mill. The essential oils and extracts are high-value natural products. They are indispensable in fine perfumery and cosmetics, as food additives and aromatherapy agents. The therapeutic use of the rose flower is recommended for mild inflammations of the mucous membrane of the oral cavity and pharynx, and for the treatment of mild skin inflammations. The aim of this research was to determine of essential oil content in fresh and dried flowers of two varieties of *Rosa centifolia* L. in different phenophases of flowering.

Material for the research was essential oil content in samples of fresh and dried flowers (*Rosae flos*) of two varieties of *Rosa centifolia* L. in three phenophases of flowering, collected in 2020 and 2021 growing seasons, in the area of Malé Leváre (Malacky district, Slovakia). The determination of essential oils was performed by steam distillation according to the requirements of the European Pharmacopoeia (10th Edition). The obtained data were evaluated statistically by using multifactor analysis of variance in the program Statistica, ver. 10.0. Significant differences were evaluated at the 0.05% significance level using the Fisher LSD test.

The content of essential oil in fresh flowers of the light variety, expressed as volume-weight percentage, were in defined phenophases F1, F2 and F3 as: 0.48%, 0.40%, and 0.40% in 2020, and as: 0.53%, 0.47%, and 0.44% in 2021. Significantly the highest essential oil content (3.04 mg/kg in average) was observed in F1 phase - the growth stag of floral bud with coiled petals and tight-fitting sepals. By drying the flower samples, the essential oil content decreased significantly, in most samples by more than two thirds compared to the fresh plant material (1.20 mg/kg in average in dry matter, 3.86 mg/kg in average in fresh matter). There was significant difference between light and dark variety (2.00 ml/kg in average in dark variety, 3.06 ml/kg in average in light variety).

The research results show that the content of essential oil in rose flowers (*Rosae aetheroleum*) depends on the investigated genotype, growing environment, harvest date and agro-climatic conditions. Our research was important for the selection of a selected genotype of the genus *Rosa* for the growing conditions of the warm agro-climatic region of Slovakia.

Key words: Cabbage rose, Yield, Essential oil, Distillation.