

The Influence of the Environment on the Content of Macro- and Microelements in the *Tanacetum vulgare*

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ABSTRACT

Tansy (*Tanacetum vulgare* L.) grows in moderate area of the northern hemisphere, in Poland – its range covers the whole country. It appears on the farm wastelands, by roadsides, on embankments, river banks, forest lips and in open spaces. The present paper has faced the challenge of defining the influence of the environmental conditions on the mineral composition of *Tanacetum vulgare* leaves. The plants were picked in the blooming period from May to September 2017 in 12 natural environments of their growth and at different contamination levels. The dried and minced plant material was submitted to chemical analyses of the bio elements content (K, P, Cu, Zn, Mo) of leaves. A great variety was observed when speaking in terms of particular elements content in dependence on the position. In all tests, significant quantities of K and P were found. The study results point at the very fact that the mineral composition of *Tanacetum vulgare* leaves is influenced by the environmental contamination, caused by the nearby “neighbourhood” of circulation areas of high traffic volume, factories or patrol stations.

Keywords: *Tanacetum vulgare* L., mineral components of plants, the anthropogenic areas, non-anthropogenic areas, environment.

INTRODUCTION

Tansy (*Tanacetum vulgare* L.) is a multianual, aromatic plant which belongs to the *Asteraceae*. Family [Jakobs and Müller 2018, Goudarzi et al. 2015, Wolf et al. 2012, Qi et al. 2018], that incorporates about 200 species [Özbilgin et al. 2018]. This particular species originates from Eurasia from where it was introduced to North America, and subsequently naturalised [Mitich 1992]. At present, *Tanacetum vulgare* appears in moderate area of the northern hemisphere [Derda et al. 2012], in Poland – its range covers the whole country [Anna Ewa Wojciechowska 2008]. It grows on the farm wastelands, by roadsides, on embankments, river banks, forest lips and in open spaces. [Kęsik, Wojciechowska, Pi'tura 2008, Mehrparvar et al. 2018]. *Tanacetum vulgare* is commonly known under the “Tansy” name, coming from a Greek word “athanasia” that means

“immortality” which probably comes from the fact that its blooms do not wither [Arandelović et al. 2017].

The plants of of *Tanacetum* type are rich in essential oils (EO). Due to the presence of thujones, the oils from *Tanacetum* have been used in the traditional medicine dating from the ancient times [Moricz et al. 2015]. The content of thujones undergoes significant changes depending on the region where the plant grows as well as on the process of its drying [Arandelović et al. 2017, Blagojevic et al. 2015]. Some chemotypes *Tanacetum vulgare* do not contain any toxic β -thujone [Héthelyi et al. 1981]. The changes in the thujone content in the tansy herbs were causing numerous problems in the folk medicine, including mistakes in the choice of an appropriate dose for making extracts. Such mistakes lead to excessive thujone consumption, which then resulted in the occurrence of many afflictions, both

