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Content of exchangeable forms of heavy metals in agradable soils and common dandelion from urban allotment gardens of the cities of Kielce and Olsztyn (Poland)

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Statement of the Problem: Common dandelion *Taraxacum officinale* agg. is a well-known medicinal plant commonly used in unconventional medicine. Due to its valuable properties, it is obtained on a large scale from urban areas considered to be potentially clean, e.g. urban allotment gardens. Common dandelion is also a recognised bioindicator as it has the ability to accumulate in its tissues high levels of heavy metals and thus it is often used in environmental research. Therefore, it seems important to determine whether the concentration of heavy metals in the soil would translate into their content in common dandelion leaves, which are then used for consumption and treatment purposes. Moreover, the purpose of this research is to determine whether the heavy metal content in the dandelion leaves is dependent on the level of air pollution in cities. Methodology & Theoretical Orientation: The research was conducted on the basis of samples taken from two Polish cities with different degrees of pollution - Olsztyn, which is classified as a clean city of low air pollution with PM10, PM2.5, sulphur and nitrogen oxides, is a city with relatively small industrial infrastructure. The comparative city was Kielce, where the values of analysed indicators are significantly higher, and the city has a post-industrial character. The samples were collected from the area of urban allotment gardens, i.e. the areas recognised as potentially clean. In each city, 15 samples of common dandelion (leaves) and soil were taken for analysis. In the leaves and soil, the content of selected heavy metals, i.e. Cu, Cd, Pb and Zn was determined by inductively coupled plasma-optical emission spectrometry (ICP OES). Findings: The content of heavy metals in the soil is reflected by their level in the leaves. The conducted research indicated that there is a dependence for all the analysed heavy metals that higher concentrations of metals in soils determine their higher content in the dandelion leaves. There was no correlation that the quality of atmospheric air has a direct impact on the content of heavy metals in soils because for the samples taken from Olsztyn, which is considered as a clean city in terms of air quality, the average concentrations of copper and zinc were higher than those reported for Kielce. Analogical situation was noted for the concentrations of these metals in the dandelion leaves.production.

Biography

Ewelina Zajecka - a doctoral student at the Jan Kochanowski University in Kielce. Authoress of numerous science articles on plant bio indicators, content of heavy metals in urban soils and bioavailable forms of heavy metals. Since 2016, she has been conducting the research on recognizing the properties of common dandelion as a bio indicator of pollution in urban areas.

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