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EFFECT OF INDUSTRIAL POLLUTIONS ON CHEMICAL COMPOSITION AND MORPHOLOGY OF MEDICINAL HERBS

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Plants have the ability to accumulate different substances from the environment, including toxic. Under adverse conditions of the environment the content of phenolic compounds (biologically active substances) in plants can be increased. Therefore, actual task is the studying of changes in chemical composition of medicinal plants as a consequence of the influence of anthropogenic factors. The aim of this research is the evaluation of the industrial pollution impact on the chemical composition and morphology of yarrow (*Achillea millefolium*), using FTIR, UV, atomic adsorption spectroscopy (AAS) and scanning electron microscopy with x-ray microanalysis (SEM/EDS). The objects of the study are samples of yarrow collected from different industrial areas of the town Tver. The results showed that the chemical composition of *A. millefolium* is sensitive to the influence of anthropogenic factor. It is established that there are essential differences in FTIR and UV-vis spectra of the samples collected from different industrial sites. Moreover, by means of UV spectroscopy the antioxidant activity of ethanol extracts is investigated. Content of some heavy metals (Fe, Zn, Mn, Cu, Cr, Pb, Co, Cd) detected in yarrow samples by AAS is changed in a wide range in dependence on the site of collection. The SEM micrographs showed some changes in the leaves morphology. EDS data of *A. millefolium* leaves demonstrate the difference in the concentrations of elements detected in the samples, depending on the place of collecting of yarrow samples.

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