

Study of Composition of Volatile Compounds of Siberian and Far East Medical Plants of the *Asteraceae* Family

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Medical and aromatic plants are of great importance as a source of useful ethereal oils. The main constituents of the oils are volatile terpenoids (mainly mono- and sesquiterpenoids) and certain phenolic derivatives. Many natural terpenoids and phenolic derivatives are biologically active compounds and exhibit a wide spectrum of biological activity. It is no wonder, therefore, that the volatile compounds of vegetable origin have been intensively studied for many decades. Composition of ethereal oils is not constant and depends on many things, including age of plants and their phase, and different ecological factors.

We have studied chemical composition of a number of species of the *Asteraceae* family growing wild in Siberia as well as the corresponding cultural forms from regional botanical gardens (*Artemisia dracunculus* L., *Artemisia obtusiloba* Ledeb., *Artemisia jacutica* Drob., *Artemisia abrotanum* L., *Artemisia scoparia* Waldst. et Kit., *Artemisia glauca* Pall. ex Willd., *Artemisia altaiensis* Krasch., *Artemisia glabella* Kar. et Kir., *Artemisia filatovae* A. Kuprijanov ssp. nova, *Artemisia pontica* L., *Brachanthemum baranovii* (Krasch. ex Poljak.) Krasch., *Ajania fruticulosa* (Ledeb.) Pojak.). Compositions of volatile compounds were studied by GC-MS using quadrupole MS (Hewlett-Packard MSD 5971) coupled to a HP 5890/II GC fitted with an HP-5 (30 m × 0.25 mm I.D., film thickness 0.25 μm) fused silica column. The percentage composition of the essential oils was computed from GC peak areas without using correction factor. Qualitative analysis was based on comparison of the retention indexes and full mass spectra of the components with the data for standards prepared by separation of reference oils and identified by NMR spectroscopy.

Our data show that various factors, both endogenous and exogenous, can affect the composition of the essential oils of Siberian species of the above plants. Those species, which are characterized by significant polymorphism and broad natural habitats, usually demonstrate great dependence of the ethereal oil composition on geographical and climatic factors (*Artemisia dracunculus*, *Artemisia scoparia*, *Artemisia abrotanum*, and *Artemisia glauca*). Contrary, compositions of ethereal oils of endemic species, such as *Artemisia jacutica*, *Artemisia altaiensis*, *Artemisia obtusiloba*, do not vary significantly and demonstrate a hereditary predetermined set of secondary metabolites.

Chemical composition of the oils is discussed as well as dependence of the content of the principal components on different factors: age of plants and their phase, genetic and ecological factors.

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