

PROSPECTS OF USING OF IR-SPECTROSCOPY METHODS FOR THE QUALITY CONTROL OF HERBS

✓ © Prokopenko Yu.S., Georgiyants V.A., Mlyshchenko V.A.,
Tsyvunin V.V., Blyznyuk N.A., Markiv V. I.

National University of Pharmacy, Kharkov, Ukraine

Spectral methods of analysis are widely used for the quality control of medicinal substances. As a rule, herbs and herbal substances are commonly standardized by microscopy, chromatography and wet chemistry methods. These data can provide a great deal of useful information for the identification of herbal material and exact quantification of valuable compounds.

The aim of our study was to determine the possibility of IR spectroscopy methods for standardization of herbal substances.

Samples of *Solanaceae* (*Datura stramonium* L., *Bel-ladonna officinalis* L., *Hyoscyamus niger* L., etc.), *Lamiaceae* (*Ocimum basilicum* L., *Origanum vulgare* L., *Thymus serpyllum* L., etc.), *Betulaceae* (*Betula verrucosa* L. leaves, *Corylus avellana* L. leaves), *Fumariaceae* (*Fumaria officinalis* L., *Fumaria Schleicheri* Soy.-Will.), *Santalaceae* (*Viscum album* L. leaves) families were used. Analyzed samples of herbal material were collected in different regions of Ukraine. Air-dried and crushed herbs were powdered and exposed to the research after extraction and in

powdered form. The Thermo Scientific microPHAZIR NIR, the Thermo Truscan RM, and the Agilent Technology Cary FTIR were used for preliminary identification of herbal material. To determine localization of active substances in herbal cells Zeiss J&M Microscope with the NIR detector was used. For microscopy research fixed samples of herbal material were prepared.

It was shown that NIR method can be used for species identify different of the same families. Also FTIR method can identify and divide different kinds of the same herb. E.g., using FTIR method has allowed us to determine differences between varieties of dried and powdered Basil herb, unlike the NIR method. Raman spectroscopy was the most informative method during analysis of herbal extracts. Microscopy method with the NIR detector can identify active compounds in herbs, so it can be used as an alternative method of identification of herbal material in normative documents.

NIR methods are promising enough for the first ID tests.