PHYTOCHEMICAL RESEARCH OF *TUSSILAGO FARFARA* L. LEAVES

Kovaleva A. M., Osmachko A. P., Kryvenok M. V.
National University of Pharmacy, Kharkiv, Ukraine
osmachkoalina5@gmail.com

Introduction.

Coltsfoot (*Tussilago farfara L.*, *Asteraceae*) – a perennial herb with the outgoing rhizome into to one meter a depth of earth and giving the from seventeen to nineteen thousand seeds per year. Although, that *Tussilago farfara* L. was official plants, scientific interest of phytochemists and pharmacologists from different countries continues unabated to it.

The official herbal drugs was leaf of *Tussilago farfara* L. (*Tussilaginis farfarae folium*). In Chinese medicine, buds of *Tussilago farfara* L. flowers were herbal drug, which have used as anti-inflammatory and expectorant remedy. In ancient times, in England and America leaves of *Tussilago farfara* L. replaced tobacco with an analgesic effect; chronic cough was treated through the smoking of flowers.

Biologically active substances (BAS) of leaves *Tussilago farfara* L. have been studied completely and contains polysaccharides (mucus up to 10%), inulin; bitter glycosides; tannins (around 6%); sitosterol; saponins; organic acids; carotenoids; traces of essential oil; flavonoids (rutin, hyperoside); some of pyrrolizidine alkaloids senkirkine and tussilagine; vitamin C (to 80 mg%).

The aim of study – chromatographic study of biologically active substances of *Tussilago farfara* L. leaves, flowers, and reduced leaves.

Materials and methods.

The objects were flowers, reduced leaves and leaves of *Tussilago farfara* L., that have been harvested in different periods of plants ontogeny in Kharkiv region, Ukraine, in 2015.

For thin-layer chromatography (TLC) study 90% ethanol extracts of studied part have used, sorbent – wax «Sorbfil», the solvent system: ethylacetate – formic acid – water (10:2:3) and butanol – acetic acid – water (4:1:2); chromatographed at the temperature 20-22 °C.

The resulting chromatograms were studied in daylight after reaction with dimethyl sulfonic acid and solution of potassium hydroxide, 2% solution of aluminum chloride, Dragendorff reagent (solution of bismuth iodide in potassium iodide) and Zonnensteins reagent (solution of phosphomolybdic acid), fluorescence – in filtrated UV-light (354 nm) before and after reactions with chromogenic reagents.

The compounds have identified used by features fluorescence in UV-light and staining with chromogenic reagents, as well as the value of R_f.

The results and discussion.

In study objects of *Tussilago farfara* L. phenol carbonic acids, hydroxycinnamic acids, flavonoids and triterpenoids have been identified.

In leaves 2 alkaloids and 2 alkaloids in reduced leaves of *Tussilago farfara* L. have been found.

According to values of R_f and features fluorescence in UV-light, color of spots of BAS before and after reactions with chromogenic reagents 11 phenolic compounds have been identified in leaves, including 5 flavonoids; in reduced leaves – 6 phenolic substances, including 4 flavonoids; in flowers – 10 phenolic substances, including 6 flavonoids. In the result of acid hydrolysis of studied sum extracts of samples of raw material flavonol aglycones (kaempferol and quercetin); flavone (luteolin and diosmetin) chromatography identified; sapogenin had been present that R_f coincide to R_f uronic acid.

In the quantitative determination of hydroxycinnamic acid content in leaves and reduced leaves was carried out, and were 4.02% and 2.64% respectively.

Conclusions.

In leaves, flowers and reduced leaves of *Tussilago farfara* L. phenolic compounds, alkaloids and saponins were studied by chromatography.

For the first time BAS of reduced leaves of *Tussilago farfara* L. was studied.