

**PHYTOCHEMICAL STUDY OF PRODUCTS OF COMPLEX PROCESSING
OF ANISE (PIMPINELLA ANISUM L.) HERBS**

Umarov U.A.

Scientific supervisor: Kolisnyk S.V.

National University of Pharmacy, Kharkiv, Ukraine

ulugbekumarov08@gmail.com

Introduction. Anise (*Pimpinella anisum* L.) is a plant of the Apiaceae family, which is native to the Mediterranean. Anise is widely cultivated in France, Japan, Chile and other countries. Anise fruits contain essential oil (89% to 93% trans-anethole), proteins, carbohydrates, flavonoids, coumarins. Roots contain coumarins and phytosterols. The essential oil of anise fruits has expectorant, antimicrobial effects, and the fruits are used as a carminative, lactagonic agent and are part of laxative preparations. When harvesting anise fruits, anise herbs remain as a by-product, which are not used in the future.

Purpose of the research. Study of biologically active substances in the products of processing of the herbs of anise, remaining after obtaining the essential oil.

Materials and methods. For the study, we used anise herbs harvested in the summer of 2019 in Kharkiv. 30.0 g (accurately weighed) of the crushed raw material was placed in a flask with a thin section, 300 ml of purified water was added. Using the Ginsberg method, an essential oil was obtained. After obtaining the essential oil, the aqueous extract was filtered, evaporated to 1/5 of the original volume, and water-soluble polysaccharide complexes (WSPC) were precipitated with a three-fold excess of cold 96% ethanol. Pectin substances (a mixture of 0.5% solutions of oxalic acid and ammonium oxalate in a 1:1 ratio) were isolated from 10.0 g of meal of anise herbs after obtaining the essential oil. Spectrophotometry in the meal was used to determine the amount of polyphenolic compounds in terms of gallic acid, and by potentiometric titration, the content of free organic acids in terms of malic acid was determined. To determine the sum of polyphenolic compounds, a weighed portion of the meal 5.0 g (accurately weighed) was placed in a flask with a thin section. Added 50 ml of 40% ethyl alcohol, connected to a reflux condenser and heated in a water bath for 30 minutes. The resulting extract was placed in a 100 ml volumetric flask, the volume of the solution was brought to the mark with 40% alcohol (solution A). 1.0 ml of solution A was placed in a 25 ml volumetric flask, the volume of the solution was brought to the mark with 40% alcohol and mixed. The optical density of the resulting solution was measured on a Hewlett Packard 8453 instrument in quartz cuvettes with an absorbing layer thickness of 10 mm at a wavelength of 270 nm. The reference solution was 40% ethyl alcohol. In order to determine the content of free organic acids, 5.0 g (accurately weighed) of meal was placed in a flask with a 250 ml section, 200 ml of purified water was poured and kept for 2 hours in a boiling water bath, cooled, quantitatively transferred into a 250 ml volumetric flask, adjusted volume to the mark (solution A). 10 ml of solution A was placed in a 500 ml flask, 250 ml of freshly boiled water was added, and titrated with 0.1 M sodium hydroxide solution potentiometrically (pH meter - HI2550, with a combined glass electrode HI 1131).

Obtained results. As a result of the study, it was found that the aqueous extract remaining after the distillation of the essential oil from the anise herbs contains - 0.4674 g of WSPC, and in the meal - 1.2941 g of pectin substances. It was also found that the amount of polyphenolic compounds and organic acids in the meal is 0.42% and 1.65%, respectively.

Conclusions. The results obtained show that the complex processing of the herbs of anise after the distillation of the essential oil, additional amounts of biologically active substances can be obtained.