

Materials and methods. Quantitative content of eleutheroside B was determined by spectrophotometer Mecasys Optizen POP (Korea). Extraction of eleutheroside B was carried out by the following procedure. 1.0 g of the crushed bark were put to a flask with capacity of 100 ml and fractional extraction with 20 ml 70%, 95% of ethanol and mixture chloroform-ethanol (5:1) was carried out. Than 10 ml of water were added to the evaporated residue in the flask and purification of water phase by the triple extraction with 10 ml of tetrachloromethane was made. The purified fraction was placed in a separation funnel, eleutheroside B was extracted by the mixture chloroform-ethanol (5:1). The extract was filtered through a paper filter with 1.0 g of sodium sulfate anhydrous into a measuring flask with capacity of 100 ml, where the mixture chloroform-ethanol (5:1) was added till the mark. Quantitative determination was made using specific absorption value of eleutheroside B at the wavelength 278 nm, taking mixture chloroform-ethanol (5:1) as a reference solution. The content of eleutheroside B (X, %) was calculated using the formula: $X = A \cdot 100 \cdot 50 \cdot 100 / A_{1cm}^{1\%} \cdot 20 \cdot m \cdot (100 - W)$, where A – absorbance of the solution studied; $A_{1cm}^{1\%}$ – specific absorption value of eleutheroside B at 278 nm; m – weight of the plant material, g; W – weight loss on the plant material drying, %.

Results and discussion. Content of eleutheroside B in the bark of common lilac of Milada variety in terms on absolutely dry plant material was 1.3 ± 0.01 %.

Conclusions. The results of the studies carried out are encouraging to use eleutheroside B (syringin) as a marker for analysis of extracts of common lilac bark of Milada variety.

THE RESEARCH ON ASSORTMENT OF COMPUTER-BASED EDUCATION PROGRAMS IN HIGHER EDUCATIONAL INSTITUTIONS

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Introduction. In the modern world one of the most promising and rapidly developing areas is the sphere of computer technology.

The use of various computer programs in educational institutions makes students improve their knowledge efficiently and faster.

One example of this approach is a knowledge testing program.

Using this form of survey creates an opportunity to obtain objective assessments of the level of skills and knowledge, as well as to identify training gaps.

One of the most significant advantages of this form of knowledge estimating is the speed of processing information.

A special algorithm for selecting questions, calculating the ratio of correct and incorrect answers allows to get the result immediately right after the end of the test.

Aim. Researching principles of the most common programs which are used to conduct computer testing system in higher education.

Determine the advantages and disadvantages of using this method.

Materials and methods. In the research, we compared several programs that differ in their functions.

Results and discussion. In the process of researching testing programs, two main types were identified: a single compiled program with ready questions base and a bunch of interdependent programs with possibility to edit questions and answers.

The advantages of several interrelated programs include their flexibility, the ability to be added, replaced and to create a new database of questions, as well as administration and full control of students during the testing. The disadvantage of this kind of program is vulnerability. The absence of any protection of the software can be fraught with the loss of data from the test database.

As opposed to the first option, the program in which the test base is added initially is much less vulnerable, what makes it more reliable in using.

The vast majority of programs work only in text mode, without support of digital images.

Conclusion. The use of this type programs will improve understanding of subjects significantly, as well as lead students to a new level of education.

The support of programs for providing digital image testing will dramatically improve the efficiency of surveys.

THE VOLATILE COMPONENTS OF SALIX CAPREA L. EXTRACT.

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Introduction. *Salix caprea* L family Willow Salicaceae L. (section *Vetrix*) - perspective source for obtaining of lipophilic biological active compounds. *Salix caprea* L. lipophilic extract contains pharmacologically active substances that are known to exhibit antioxidant, antimicrobial activities against *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Candida albicans* and wound healing activity and others activities. Therefore, special attention is given to the study of biologically active substances of shoots of plants of the Salicaceae family. The literature data and the results of the studies previously carried out at the Department of Pharmacognosy of the NUPh has allowed to determine that different types of the raw material of willows have a rich chemical composition and contain a complex of biologically active substances with a high pharmacological activity such as phenolic compounds (phenolic alcohols, phenolic glycosides, hydroxycinnamic, hydroxybenzoic acids, coumarins, flavonoids, tannins), lipophilic compounds, amino acids, carbohydrates, substances of the terpenoid nature.

Aim. The aim of our research is to study the volatile components of lipophilic extract from *Salix caprea* L. shoots.

Materials and methods. An lipophilic extract from *Salix caprea* L. shoots were got by fractional maceration with using chloroform. Shoots of *Salix caprea* L. were collected in June–July in 2017 in M.M. Gryshko National Botanical Garden of the NAS of Ukraine (Kyiv). By the method GC/MS using the chromatograph of Agilent Technologies 6890N *Salix caprea* L. shoots and extract obtained from the shoots was analyzed. To identify components the NIST05 and WILEY 2007 mass spectra library with the total number of spectra more than 470000 is used in combination with AMDIS and NIST programs for identification. For quantitative calculations the method of internal standard is used.

Results and discussion. An lipophilic extract from *Salix caprea* L. shoots were got by fractional maceration with using chloroform. We have defined the content of lipophilic fraction in the raw material, which made 11,7%.

In lipophilic extract from *Salix caprea* L. shoots 47 components and have been found by the method of chromatography-mass spectrometry. The results of the study are presented in Table 1.

Table 1. The chromato-mass-spectrometric identification of the volatile substances of *Salix caprea* L. extract

No.	Component	The content of the volatile substances (mg/kg)	
		<i>Salix caprea</i> L. shoots	Lipophilic extract from <i>Salix caprea</i> L. shoots
1	cyclohex-2-en-1-on	-	187.70
2	2-hydroxybenzaldehyd	-	87.89
3	benzyl alcohol	-	467.66
4	cyclohexane-1,2-diol	-	807.97
5	trans-linalool oxide	25.58	56.31
6	cis-linalool oxide	40.46	50.26
7	phenylethyl alcohol	44.91	544.77
8	caprylic acid	6.77	-