9th International Pharmaceutical Conference

„SCIENCE AND PRACTICE" 2018

Dedicated to the 100th anniversary
of independent Lithuania's pharmacy

BOOK OF ABSTRACTS

November 9, 2018
Kaunas, Lithuania

9TH INTERNATIONAL CONFERENCE OF PHARMACY SCIENCE AND PRACTICE

2018

9th of Novemver, 2018 Lithuanian University of Health Sciences, Sukilėlų 13, Kaunas Lithuania

ABSTRACT BOOK

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Perspective for using *Acorus calamus* leaves in medicine

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Background. *Acorus calamus* - is a herbaceous perennial plant, originated in the Far East. In official medicine only the rhizome of the plant is used. There is some evidence of a significant similarity in the chemical composition and pharmacological action of rhizomes and leaves of calamus, so the research of leaves is necessary.

Materials and methods. For this experiment, we used batches of the raw material, Acorus Calamus rhizomes and leaves, gathered in Kharkiv region.

The quantity of essential oil was measured with the method of steam distillation [3]. The chemical composition of the essential oils was studied with gas chromatography-mass spectrometry [1, 2]. Identification of the toxic substance asarone and determination of its content limit were carried out with the thin-layer chromatography (TLC) method [4]. Qualitative and quantitative studies of the flavonoids chemical composition were carried out with the methods of TLC and spectrophotometry [3].

Results. According to the results of the investigation the content of essential oil was 2,0% in the rhizomes and 1,74% in the leaves. There were detected and identified 33 compounds in the rhizomes. Most substances belong to sesquiterpenoids (56,71% of all compounds), aromatics (21,84%) and monoterpenoids (6,81%). Shiobunon (30,10%), asarone (19,12%), aromadendren (10,43%) and β-caryophyllene (5,40%) were dominant components. Among the 42 identified compounds, sesquiterpenoids were dominant in the leaves - 37.8%. Also, a significant amount was accumulated aromatic compounds - 25.4%, and monoterpenoids - 20.6%. Among the individual components, azarone (20.2%), β-caryophyllene (16.4%), germacrene B (9.7%), δ-cadinene (7.9%) and linalool (7.9%) were dominant.

Zones (Rf close to 0.43) with pink-purple colour were detected in all samples of the raw materials in comparison with zones of standard substance with different asarone concentration. We have proved experimentally that the amount of asarone in all samples under test does not exceed 0,5 %.8 zones were detected by thin layer chromatography in the above-ground part of the plant. According to the colour and Rf index the substances were assigned to phenolic compounds which rutin is identified from. It has been experimentally proved that up to 1% of flavonoids accumulate in the leaves of calamus. This group of compounds is not identified in the rhizomes.

Conclusions. We have proved experimentally that calamus rhizomes and leaves have pretty similar qualitative and quantitative chemical composition of essential oil and at the same time the calamus leaves accumulate phenolic compounds in large numbers. In view of this, the leaves of calamus are a promising source of biologically active substances for the development of medicinal herbal substances on their basis.

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