

including argan oil have been used in the traditional Moroccan medicine for centuries to cure skin diseases, such as skin pimples, juvenile acne, and chicken pox pustules. It is also extensively used in prevention of wrinkles formation and in fighting dry skin and dry hair. Due to its chemical composition, it is claimed to be an important source of antioxidants and an effective agent in the prevention and treatment of cardiovascular diseases, which is able to lower the blood cholesterol and triacylglycerides level in humans.

Purpose of the study. Determination of the qualitative composition and the quantitative content of components of Argan oil produced in Morocco.

Materials and methods. The samples of argan oil, produced in three regions in Morocco in 2018, were used for the current research. The analysis of the samples was carried out using the combined Gas Chromatography-Mass Spectrometry method using the PerkinElmer TurboMass software at the Mohammed V University (Rabat, Morocco).

Results and discussion. The study has shown the presence of both saturated and unsaturated fatty oils in the composition of all the studied samples. Among the saturated acids palmitic and stearic acids prevailed, while among the unsaturated ones oleic and linoleic acids were found in larger quantities. As for sterols, γ - and β -sitosterol were found in rather high quantity, and the marker sterol schottenol was also detected in the samples studied.

Conclusions. The data received have shown the difference in the composition of argan oil of Moroccan regions, which helped identifying the prevailing components in each of the samples, as well as the adulterants in each of the samples studied.

PHENOLIC COMPOUNDS OF IRIDODICTYUM RETICULATUM CANTAB

Konovalova M. A.¹, Orlova T.G.²

Scientific supervisor: Mykhailenko O.O.¹, Kovalyov V.M.¹

¹National University of Pharmacy, Kharkiv, Ukraine

²Botanical garden of the Kharkiv National University named after V.N. Karazin, Kharkiv, Ukraine
mkonovalova688@gmail.com

Introduction. Medicine successfully uses for the rehabilitation and prevention of human diseases drugs based on medicinal plants. They have low toxicity with a sufficiently high efficiency, a wide range of therapeutic actions, a minimum of side effects, a relatively cheap cost compared with synthetic drugs. Some of the most promising for research are plants of the genus *Iris*, known as ornamental herbaceous plants. They are widely distributed and cultivated in Ukraine, unpretentious in the care, contain a significant amount of biologically active substances (BAS): flavonoids, isoflavonoids, essential oils, organic acids, aldehydes, glycoside iridine, carotenoids, saponins, fatty oils, fatty acids, tannins, starch, xanthones, coumarins, hydroxycinnamic acids, aglycones. It has long been used in folk medicine as an astringent, expectorant, anti-inflammatory, analgesic, enveloping, diuretic, anthelmintic, hemostatic agents. In cosmetology: essential oil is used in high-quality perfumes ("Chanel No. 19", "Extravagance d'Amarige", "Champs-Elysees", "Ghost summer breeze"), rhizome extract – moisturizing products for face and body skin care, as well as through estrogenic activity – for the treatment of hair and scalp.

Plants of the genus *Iridodictyum* belong to the family Iridaceae and they are often referred to as bulbous *Iris* (or *Iridodictyum*), as their underground portion is an bulb. The genus *Iridodictyum* has a total of 11 plant species (The Plant list, 2019). The homeland is Asia Minor and Central Asia. These are perennial plants with a height of 9–10 cm, which begin to bloom as snow melts, after flowering a large above-ground part (15–20 cm) is formed. The leaves are dark green, quadrangular, with a membranous vagina. After flowering, the leaves are drawn out and become longer than the stems. They are successfully cultivated in Ukraine. The chemical composition of plants of the genus *Iridodictyum* has not been studied, so it was important to conduct phytochemical studies. Promising for study are: netted iris (*I. reticulatum* (Bieb.) Rodion.) and its varieties such as 'Cantab' with blue-violet, 'Clarette', 'Ida' with light blue, 'Joyce', 'Edward', 'Violet Beauty' with violet-blue, 'Purple Gem' with violet-reddish color of flowers.

Aim. The aim of our study was to conduct a qualitative and quantitative determination of the composition of phenolic compounds in the *Iridodictyum reticulatum* variety Cantab.

Materials and methods. The object of the study was the leaves of *Iridodictyum Cantab* harvested in the Botanical Garden of V. N. Karazin Kharkiv National University (Kharkiv, Ukraine) in May 2017. Raw materials were dried to air-dry condition. For determinations, 70% alcohol-water extract was used.

A preliminary study of the qualitative composition of phenolic compounds in raw materials was carried out using the methods of one-dimensional and two-dimensional chromatography on paper Filtrak FN 4 in the systems n-butanol –acetic acid – water (4: 1: 2) and 15% CH₃COOH.

Qualitative reactions to flavonoids were carried out: 1) cyanide sample, 2) reaction with alkali (10% NaOH), 3) with FeCl₃; for tannins: 1) general precipitates with 1% gelatin solution, 1% quinine chloride solution, Pb(CH₃COO)₂ basic, 2) staining reaction with ammonium-iron alum, 10% CH₃COOH and 10% solution Pb(CH₃COO)₂; on saponins: 1) foaming, 2) sedimentation with barite water, 10% Pb(CH₃COO)₂ basic, 3) staining: Lafon reaction, Salkovsky reaction, Sagnier reaction; for coumarins: 1) with alkali (10% NaOH) and diazoreactive, 2) lactone test with 10% alcoholic solution of NaOH and 10% HCl.

The quantitative content of the main groups of biologically active substances in the raw materials was carried out spectrophotometrically: the amounts of polyphenols in terms of gallic acid, the amounts of flavonoids in terms of rutin (by the modified method “Herba Hyperici”, State Pharmacopoeia (SP, XI), the amounts of isoflavonoids in terms of onoside (by the modified method “Radix Ononis”, SP XI), the amounts of hydroxycinnamic acids in terms of chlorogenic acid according to the method developed by the molecular spectroscopic analysis sector of the GNTCL (TPM “Herb Erigeron Canadian”) (42-U-6/37-323-96). The determinations were carried out on an Evolution 60S spectrophotometer (USA). The content of tannins in terms of condensed tannins was carried out by the method of permanganometry according to SP XI.

Results and discussion. The presence of flavonoids, triterpene saponins, hydroxycinnamic acids and condensed tannins was established by qualitative reactions in aqueous-alcoholic extracts from the leaves of *Iridodictyum Cantab*. Coumarins were not identified.

Using two-dimensional chromatography in the systems: 15% acetic acid (I) and BWH (4: 1: 2) (II), several substances of phenolic nature were identified in the leaves; according to chromatographic behavior in the UV (ultra-violet) light, substances can be attributed to flavonoids, hydroxycinnamic acids and isoflavonoids. Using paper chromatography in a 2% acetic acid system with reliable samples, chlorogenic, neochlorogenic and cinnamic hydroxycinnamic acids were identified.

The quantitative content of the amount of polyphenolic compounds in the leaves of *Iridodictyum Cantab* was $5.40 \pm 0.10\%$, the amount of flavonoids – $4.73 \pm 0.13\%$, the amount of isoflavonoids – $7.84 \pm 0.13\%$, the amount of hydroxycinnamic acids – $1.08 \pm 0.19\%$, the amount of tannins – $2.31 \pm 0.09\%$.

Conclusions. The results showed that further in-depth study of the *Iridodictyum reticulatum* variety *Cantab*, as a source of biologically active substances, can be considered promising for pharmacy.

PROSPECTS OF LYCIUM BARBARUM ANTIOXIDANTS FOR THE SPORTS MEDICINE USE

Kovaleva O.O.¹, Fathi Kaoutar², Kovalev V.V.²

Scientific supervisor: PhD Kovalev V. V.

¹H.S. Skovoroda Kharkiv National Pedagogical University

²National University of Pharmacy, Kharkiv, Ukraine

volodyakw@gmail.com

Introduction. Competition causes constant increase in volumes and intensity of athlete’s loads who are often in extreme conditions in modern sports. This determines the search for new ways of comprehensive support to the athlete’s body. Rational and systematic use of recovery determines the effectiveness of the whole system of their preparation, during the annual cycle, and during periods of high loads in many respects.

Protective systems of athletes bodies not always can respond to stress caused by high physical activity adequately. The risk of developing violations in the work of systems and organs rises sharply as a result.