

began in 2015. It should be noted that the environmental conditions have a great impact on the accumulation of secondary metabolites of saffron (crocin, picrocrocin, safranal), which determine the raw materials quality.

Aim. The aim was to develop saffron cultivation stages in Ukraine using GACP principles that will harmonize the technological processes and improve the quality of herbal raw materials to international and European requirements. **Object.** Saffron from Ukraine and quality management system for the cultivation and harvesting of medicinal plants.

Materials and methods. WHO Guideline GACP (2003). The studies were carried out on the plantation in the village Lyubimivka, Kherson region in Ukraine in 2016/2021.

Results and discussion. In 2017, based on the farm in Kherson was first conducted research on saffron cultivation in Ukraine in accordance with GACP requirements. A standard working procedure developed and implemented for use by the farm – production of saffron stigma, includes the following steps: description of the plant, corms, harvested plant part; sowing conditions (soil enrichment, disease, irrigation, sowing, harvesting, yield), primary processing, transportation and storage, packaging, quality control, and documentation. The main proposed stages of saffron cultivation are reflected in the guideline, patent and information sheet.

Conclusion. Stages of saffron cultivation in Ukraine in accordance with GACP requirements are implemented, which guarantee the traceability of raw materials and its stable quality.

PROSPECTS FOR DEVELOPMENT OF MEDICINAL SUBSTANCES WITH ANTIVIRAL ACTIVITY FROM PLANT RAW MATERIALS OF GENERA *EPILOBIUM* L. AND *CHAMAENERION* SEG.

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Introduction. Diseases of viral etiology are one of the urgent problems of medicine. Viral diseases take many forms, they can affect many organs and systems, lead to the development of chronic diseases and contribute to the development of numerous complications. Medicinal plant raw materials and substances based on them are constantly used for the prevention and treatment of these types of pathology. Plants of genera *Epilobium* L and *Chamaenerion* Seg. (family *Onagraceae* Juss) are natural sources of phenolic compounds such as elagitannins, flavonoids and phenolic acids.

Aim. The aim of this study is to give a brief review on antiviral activity of plants of genus *Epilobium* L and *Chamaenerion* Seg. and potential for developing medicines from their raw materials for prevention and treatment of diseases of viral etiology.

Materials and methods. This review was based on the analysis of articles referred in major scientific databases. NCBI-PubMed, Web of Knowledge, Science Direct Wiley Online Library and eLIBRARY.RU.

Results and discussion. The effect of aqueous ethanol extracts from *Chamaenerion angustifolium* (L.) Scop and *Epilobium hirsutum* L. was studied on the reproduction of influenza A viruses in several research.

The determination of virus-inhibiting properties and virucidal activity *in ovo* of aqueous ethanol extract of *Ch. angustifolium* for two strains of the influenza A virus (A/tern/South Africa/1/61

(H5N3) and A/FPV/Rostock/34 (H7N1)) was carried out. According to results the extract suppressed 50% of the reproduction of 100 infectious doses of the virus regardless of the antigenic structure in doses of 0.04-0.07 mg per chicken embryos. Moreover, the extract at a dose of 1 mg per chicken embryo is capable of influence the infectivity of the influenza virus more than by 3lg.

A significant inhibitory effect of aqueous ethanol extract and four fractions from the polyphenolic mixture of *E. hirsutum* on the reproduction of influenza A viruses (A/PR/8/34 (H1N1) and A/Hong Kong/1/68 (H3N2)) *in vitro*, *in ovo*, and *in vivo* was confirmed. Applied 1 h before or simultaneously with the viral infection, the extract reduced the infectious titer of H1N1 strain with 2 - 2.5 lg and the titer of H3N2 strain with 1.66 - 3.0 lg *in ovo*. The protective effect was 69.23 percent for H1N1 and 71.59 percent for H3N2 strains when the extract was applied simultaneously with the virus. In the course of experimental influenza infection in mice with H1N1, the extract in doses of 35 and 70 mg/kg applied simultaneously with the virus inhibited its reproduction, reduced the lung infectious titer with 1.3 - 2.5 lg, and increased the number of survivors. The antiviral effect of the fractions from *E. hirsutum* was studied in the course of an experimental influenza infection in mice with virus H3N2. All fractions significantly inhibited the reproduction of virus H3N2; the infectious titer in the lungs of treated animals was reduced with 1.5 - 4.5 lg. The mortality rate was decreased in all experimental groups. The number of surviving animals was also increased in the groups of mice treated with one of the fractions in the course of an experimental infection with virus H1N1. The most of researchers considered the tannins to be the active principle constituents of the antiviral activity of an extract from *E. hirsutum*. The total polyphenolic mixture used in the experiments was free of tannins. Authors of this study claimed that the inhibitory activity of the extract from *E. hirsutum* and the fractions on the reproduction of influenza virus *in vitro*, *in ovo*, and *in vivo* could be related to the presence of other polyphenolic substances, mainly flavonols.

Furthermore, oenothien B, the main elagitannin of these genera, were investigated for its antiviral action on herpes simplex virus (HSV-1, strain HF)-infected African green monkey kidney cells and human adenocarcinoma cells, using a plaque formation assay. The inhibition by compound was very potent (ED₅₀= 0.036 µg/ml), at the same time, 50% effective dose was 2 orders of magnitude lower than its respective 50% cytotoxic doses (CD₅₀= >30 µg/ml).

Conclusions. To conclude, several studies of the antiviral activity of extracts of *Ch. angustifolium*, *E. hirsutum* and oenothien B reported ability of this substances to This data confirm the prospects for further study of antiviral activity of plants of genera *Epilobium* and *Chamaenerion* on a wider range of virus strains and development of medical substances for the prevention and treatment of viral diseases from their raw materials.

RESEARCH OF BIOLOGICALLY ACTIVE SUBSTANCES OF COFFEE ON THE MARKET OF UKRAINE

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Introduction. The coffee tree (*Coffea* L.) is a genus of evergreen plants in the *Rubiaceae* family. The genus includes 125 species. The two most popular are *Coffea arabica* (commonly known simply as “Arabica”), which accounts for 69% of the world's coffee production, and *Coffea canephora* (known as “Robusta”), which accounts for about 29%. Robusta is generally considered a less refined coffee beans in terms of aroma, however it contains more caffeine and is also often used