

Title of the project: AP13067774 "Search for biologically active substances and their use in agriculture"

Relevance:

The relevance of the work lies in the fact that many plants growing on the territory of Kazakhstan have not yet been studied. It is also necessary to conduct studies to study their biological activity. It has been established that natural substances have a pronounced biological activity, while they show a low level of toxicity and have a low level of contraindications.

Purpose: study the phytochemical composition of plants containing bioactive substances, isolate the target components, establish their composition, structure and biological activity. Replenishment of scientific data on the composition of plants and the possibility of using essential oils, extracts, tinctures and individual components of plants for the treatment and prevention of crops.

Expected and achieved results:

- extracts of promising plants will be developed in order to isolate active fractions and components;

- the active components of the extracts will be isolated;

- purification of substances and determination of the structure, physical and chemical properties of the isolated compounds will be carried out;

- a final report and publications on the research topic will be prepared.

Results for 2022:

- a literature review and a patent search on the research topic were carried out, a field expedition was conducted to collect potential plants, during expedition were collected: *Chamaenerion angustifolium*, *Dasiphora fruticosa*, *Calligonum aphyllum*, *Limonium gmelinii*, *Sanguisorba officinalis*, etc;

- an apparatus for obtaining extracts was assembled, extractants were selected, primary extracts were obtained, the ash content of the collected plants was determined;

- based on the results of the work, 1 thesis and 2 articles were published.

Results for 2023:

- a scientific expedition was organized to collect promising plants;

- phytochemical analysis of extracts and essential oils was carried out;

- the component composition of the obtained oils was determined by gas chromatography;

- cytotoxic, fungicidal, antibacterial activities of the obtained extracts and essential oils were determined;

- published 1 article (KOKSON) and 4 theses in international conferences.

Research group members:

Project manager: Ibatayev Zharkyn PhD, Hirsch index – 6.

<https://scholar.google.com/citations?user=HQIVd5IAAAAJ&hl=en>

ID of author in Scopus 55796342800.

ID of researcher in Web of Science C-1722-2017.

ORCID ID 0000-0003-2261-222X.

Leading Researcher: Suleimen Raigul Nurbekkyzy, PhD, senior lecturer at L.N. Gumilyov Eurasian National University. Hirsch index – 3.

ID в Scopus 57193513362.

ID Web of Science AAN-8634-2020. ORCID 0000-0003-3338-2722.

ID in Publons 3630103.

Senior Researcher: Ashirbek Ainur Kurmangaliqyzy, Master Science in Chemistry, orcid.org/0000-0002-5933-6831

Senior Researcher: Zhansaya Kanybekovna Kombaeva, Master Science.

Researcher: Tkachenko Olga Vasilievna, biologist, researcher at the A.I. Baraev Research and Production Center for Grain Farming.

Junior researcher: Mukusheva Ulzhan Serikovna, chemist, laboratory assistant ORCID ID: 0000-0003-3584-7415

Information for potential users:

We invite interested persons and organizations to scientific and practical cooperation.