



th
5 *International
Scientific Online
Conference*

DOI: <https://doi.org/10.15414/2021.9788055224015>

**AGROBIODIVERSITY FOR IMPROVING
THE NUTRITION, HEALTH, QUALITY OF LIFE
AND SPIRITUAL HUMAN DEVELOPMENT**



Slovak University of Agriculture in Nitra
Institute of Plant and Environmental Sciences
Excellent Centre for the Conservation and Sustainable Use
of Agrobiodiversity
Research Centre AgroBioTech



M.M. Gryshko National Botanical Garden
of the National Academy of Sciences of Ukraine
Kyiv, Ukraine
Department of Fruit Plants Acclimatization

Book of Abstracts

of the

**5th International Scientific
Conference**

**Agrobiodiversity for Improving the
Nutrition, Health, Quality of Life and
Spiritual Human Development**

November 3rd 2021

Nitra-2021



BIOLOGICALLY ACTIVE SUBSTANCES OF *CYNOXYLON JAPONICUM* (SIEBOLD & ZUCC.) NAKAI

Alla Kustovska, Yevhen Kustovskyi

National Dragomanov Pedagogical University, Kyiv, Ukraine; E-mail.: kustoa@gmail.com

Considering the increasing number of patients with different forms of tumors, it is important to extend a range of plants, which can be used as a source of raw materials for cancer medicine. The amount of such species includes *Cynoxylon japonicum* (Siebold & Zucc.) Nakai – a plant that can be characterized as a strong cytostatic. It is no less important to identify the most appropriate conditions of growing of the plant, particularly to study its allelopathic activity. The latter would allow to determine resistance of the herb to biologically active substances of other plants. The aim of the study, therefore, was to measure cytostatic and allelopathic activities of the extract from fruits of *C. japonicum*.

To evaluate a strength of allelopathic influence of the *C. japonicum* we have prepared an extract following the methodology by A.M. Hrodzynskyi. Seeds of *Sinapis alba* L. and *Triticum aestivum* L. were selected by us as test objects. Biometric indicators were measured after a week of termostating. An inhibitory effect was noticed in a case of both test objects. A seed germination of the *Triticum aestivum* in the control was 100 % in comparison with zero germination of seeds in the solution. Only 60 % of seeds of the *Sinapis alba* have grown in the control and none of them in the solution. Incomplete germination of *Sinapis alba* seeds in the control may be explained by a high sensitivity of the *Sinapis alba* cultivating under laboratory conditions or by an insufficient quality of seeds. The study shows that collins of the *C. japonicum* affect not only a productivity of plants but also their vegetation. The high allelopathic activity of the *C. japonicum* gives us a reason to conduct further experiments in selected direction with lower concentrations of the extract.

The research of the cytostatic activity of extract from fruits of the *C. japonicum* was conducted with the methodology by V. B. Ivanov, H. N. Bystrova and V. H. Dubrovskyi. According to the methodology, seeds of *Cucumis sativus* were used as test objects. Biometric indicators were measured on the third and the seventh day of termostating. On the third day a 100 % seed germination was observed, a length of the main root was decreasing in direct proportion to extract concentration. Final measurements were done on the seventh day. We have counted a number of lateral roots, sprout's and main root's longitudes at different concentrations of the extract. As the result of the research it has been found that at concentrations 250, 300, 350 and 400 mg/ml there is an almost complete absence of growing of lateral roots, whereas at concentration 450 mg/ml the extract from fruits of *C. japonicum* completely stops their development. Consequently, biologically active substances extracted from fruits of *C. japonicum* are inhibitors of proliferation at concentrations 250–450 mg/ml. Also, at concentration of 350 mg/ml was detected an imbalance in developing of axial organs: predominance of root over sprout. In this way, biologically active compounds from the extract of fruits of the *C. japonicum* are probably able to disrupt a ratio between auxins and cytokinins to the advantage of the first.

The results of the study allows us to recommend *Cynoxylon japonicum* as a strong cytostatic that can be potentially used as a source of raw materials for cancer medicine. The demonstrated level of the allelopathic influence provides high resistance of *Cynoxylon japonicum* to the influence of collins.

Keywords: *Cynoxylon japonicum*, fruits, allelopathic influence, cytostatic activity.