# FIRST INTERNATIONAL CONFERENCE «INTEGRATION NETWORK OF THE PHARMACEUTICAL ECOLOGY IN THE MODERN ENVIRONMENT - 2023»

**STUDY OF THE SECONDARY METABOLITES ACCUMULATION IN GARDEN CRESS (LEPIDIUM SATIVUM L.) UNDER THE EFFECT OF REYNOUTRIA × BOHEMICA CHRTEK ET CHRTKOV LEAF EXTRACT**

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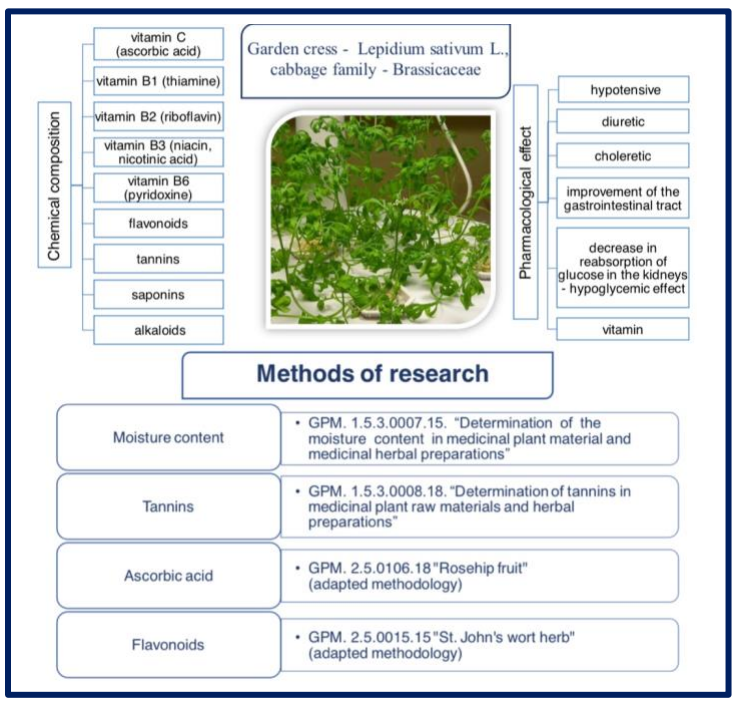



Aim: to study the variability of flavonoid, tannin and ascorbic acid content in garden cress depending on variety and cultivation conditions.

Objectives:

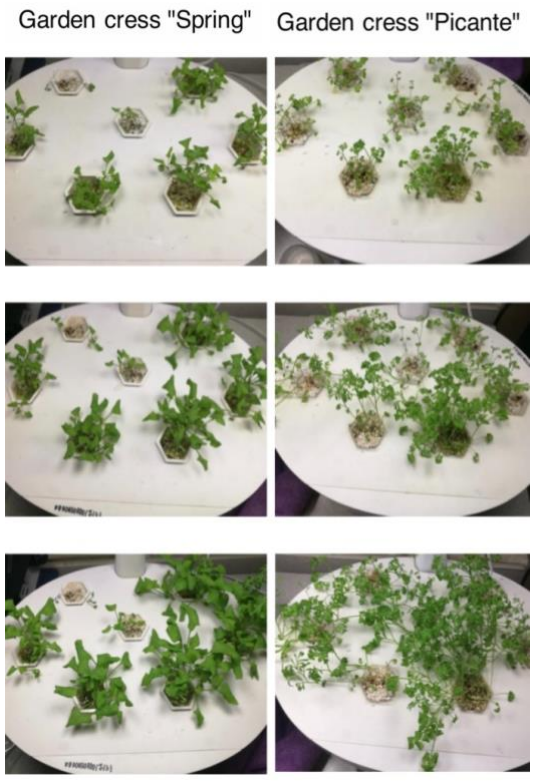
1.Carry out information-analytical available scientific literature on the research issues.

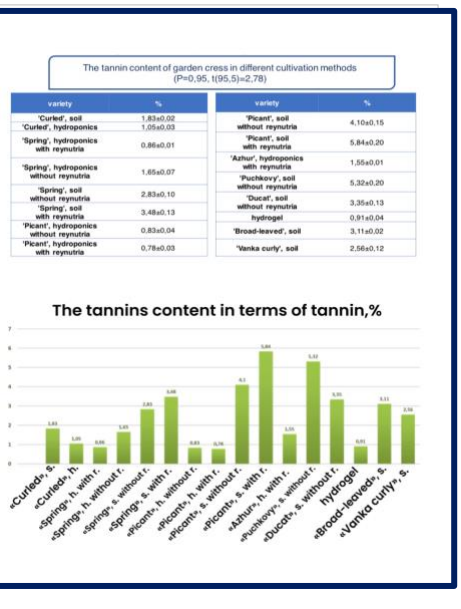
2.Determine the content of flavonoids, tannins and ascorbic acid in garden cress herb of different varieties grown on soil.

3.Determine the content of flavonoids, tannins and ascorbic acid in garden cress of different varieties grown on hydroponics and hydrogel.

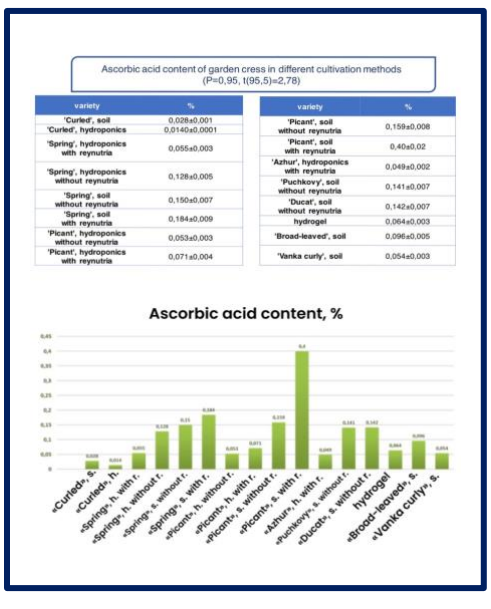
4.Evaluation of the effect of a stimulant isolated from Bohemian reynutria on the accumulation of secondary metabolites (flavonoids, tannins and ascorbic acid) in garden cress of different varieties and cultivation methods.

Soaking for 1 day in a de-alcoholised extract (1:10, 70% ethanol, evaporated, dissolved in water) of Reynoutria bohemica (DERB) was used for seed pretreatment.

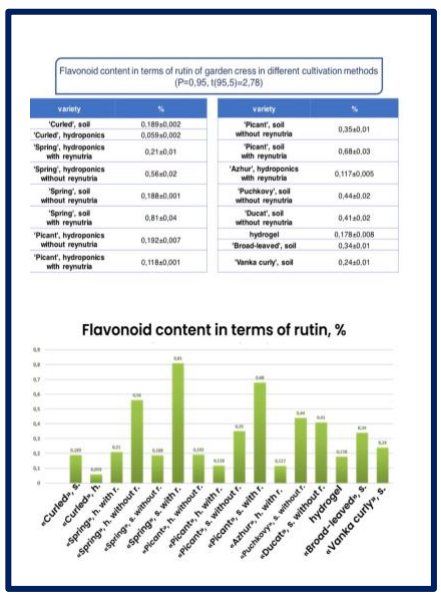


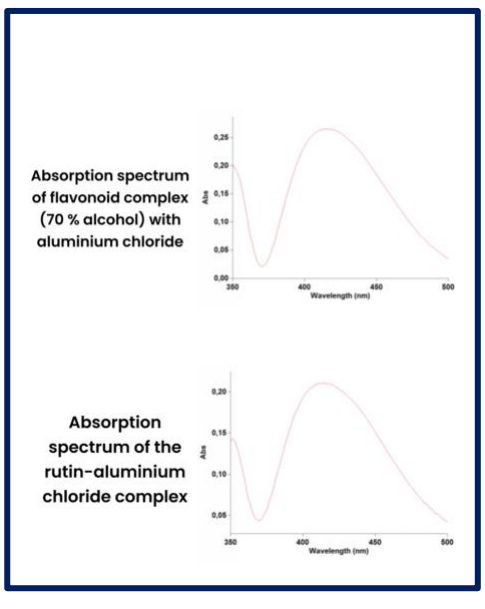

| variety | % | variety | % |
|---|---|---|---|
| 'Curled', soil | 1,83±0,02 | 'Picant', soil without reynutria | 4,10±0,15 |
| 'Curled', hydroponics | 1,05±0,03 | 'Picant', soil with reynutria | 5,84±0,20 |
| 'Spring', hydroponics with reynutria | 0,86±0,01 | 'Azhur', hydroponics with reynutria | 1,55±0,01 |
| 'Spring', hydroponics without reynutria | 1,65±0,07 | 'Puchkovy', soil without reynutria | 5,32±0,20 |
| 'Spring', soil without reynutria | 2,83±0,10 | 'Ducat', soil without reynutria | 3,35±0,13 |
| 'Spring', soil with reynutria | 3,48±0,13 | hydrogel | 0,91±0,04 |
| 'Picant', hydroponics without reynutria | 0,83±0,04 | 'Broad-leaved', soil | 3,11±0,02 |
| 'Picant', hydroponics with reynutria | 0,78±0,03 | 'Vanka curly', soil | 2,56±0,12 |




| variety | % | variety | % |
|---|---|---|---|
| 'Curled', soil | 0,028±0,001 | 'Picant', soil without reynutria | 0,159±0,008 |
| 'Curled', hydroponics | 0,0140±0,0001 | 'Picant', soil with reynutria | 0,40±0,02 |
| 'Spring', hydroponics with reynutria | 0,055±0,003 | 'Azhur', hydroponics with reynutria | 0,049±0,002 |
| 'Spring', hydroponics without reynutria | 0,128±0,005 | 'Puchkovy', soil without reynutria | 0,141±0,007 |
| 'Spring', soil without reynutria | 0,150±0,007 | 'Ducat', soil without reynutria | 0,142±0,007 |
| 'Spring', soil with reynutria | 0,184±0,009 | hydrogel | 0,064±0,003 |
| 'Picant', hydroponics without reynutria | 0,053±0,003 | 'Broad-leaved', soil | 0,096±0,005 |
| 'Picant', hydroponics with reynutria | 0,071±0,004 | 'Vanka curly', soil | 0,054±0,003 |




| variety | % | variety | % |
|---|---|---|---|
| 'Curled', soil | 0,189±0,002 | 'Picant', soil without reynutria | 0,35±0,01 |
| 'Curled', hydroponics | 0,059±0,002 | 'Picant', soil with reynutria | 0,68±0,03 |
| 'Spring', hydroponics with reynutria | 0,21±0,01 | 'Azhur', hydroponics with reynutria | 0,117±0,005 |
| 'Spring', hydroponics without reynutria | 0,56±0,02 | 'Puchkovy', soil without reynutria | 0,44±0,02 |
| 'Spring', soil without reynutria | 0,188±0,001 | 'Ducat', soil without reynutria | 0,41±0,02 |
| 'Spring', soil with reynutria | 0,81±0,04 | hydrogel | 0,178±0,008 |
| 'Picant', hydroponics without reynutria | 0,192±0,007 | 'Broad-leaved', soil | 0,34±0,01 |
| 'Picant', hydroponics with reynutria | 0,118±0,001 | 'Vanka curly', soil | 0,24±0,01 |




Conclusions

1.Garden cress contains various biologically active substances that have a positive effect on the human organism, a wide range of pharmacological activity has been established for different parts of the plant, which indicates the prospects of introducing garden cress into medical practice, and not only using it as a food plant with high nutritional value.

2.The growth and phenological development of plants on hydroponics was much faster, and significantly more phytomass was obtained than when growing by the soil method.

3.Presowing treatment of garden cress seeds with a stimulant from Reinutria positively influenced the growth and development of plants and accumulation of raw phytomass when growing garden cress on hydroponics (especially expressed) and on soil.

4. When comparing the quantitative content of tannins, flavonoids and ascorbic acid in garden cress of different varieties, it was found that the pre-sowing treatment of garden cress seeds with a stimulant from reynutria when sowing into the soil increases the content of tannins, flavonoids and ascorbic acid in the grass, and when using hydroponic method of growing plants grow too fast and have no time to accumulate BAS, their content is lower.

References

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2. Maevskij P.F. Flora srednej polosy evropejskoj chasti Rossii. 11-e izd. [Flora of the middle zone of the European part of Russia. 11th ed.], Moscow: Tovarishchestvo nauchnyh izdanij KMK, 2014, pp. 84-85.
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