Fructose biopolymers contained in roots of *Heliánthus annuus*
Problem statement

- Our research aims to investigate biopolymers based on fructose and tannin contained in the roots of *Heliánthus annuus*.
- We have also set an objective to study the yield of inulin in the extract at different temperatures, which is important for the development of a functional drink.
Solution methods

• Materials
Dried crushed root *Helianthus annuus* of Altai region

Fig. 1 Object of research
Solution methods

Methods

• GOST 24027.2-80 Methods for determination of moisture, ash content, extractive and tannin materials, essential oil
  • The method for determining the extractives content
  • The method for determining the tannins content

• The method for determining the moisture content
• The method for determining the inulin content in the extract

Fig. 2 Moisture analyzer MOC63u

Fig. 3 Photocolorimeter КФК-3.01
Research results

<table>
<thead>
<tr>
<th>Quantitative characteristics</th>
<th>Value</th>
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<tbody>
<tr>
<td>The moisture content, %</td>
<td>$13.52 \pm 0.87$</td>
</tr>
<tr>
<td>The extractives content, % in absolutely dry raw materials</td>
<td>$22.49 \pm 0.17$</td>
</tr>
<tr>
<td>The tannins content, % in absolutely dry raw materials</td>
<td>$4.54 \pm 0.05$</td>
</tr>
<tr>
<td>The content of the sum of fructosans in terms of inulin and absolutely dry raw materials, %</td>
<td>$4.12 \pm 0.01$</td>
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Fig. 4 Dependence of the amount of inulin in the drink on the temperature of the water used to prepare the drink
Conclusions

We have studied the sunflower root. The investigated dried root contains 22.49% extractives, 4.54% tannins, and 4.12% inulin. We have also investigated the yield of inulin into the extract at different extraction temperatures, which is important for the development of a functional drink. The optimum extraction temperature is 60 °C, which allows the maximum yield of inulin into the extract.

• The data obtained will help to implement the project for the development of a functional drink.

• This study is relevant, since the chemical composition of sunflower root has been little studied in the international and Russian literature.

• Resource-saving focus of the sunflower root project.
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