STUDY OF THE CARBOHYDRATES OF SAFFLOWER

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Introduction. Safflower (the safflower, American saffron, wild saffron, sultanica, dyeing Thistle, krokos (lat. Carthamus tinctorius L.) is an annual plant of the family Asteraceae. On our country there are created several varieties of this plant: solar, steppe, agile, affectionate.

Aim. The aim of this work is the study of free and compound carbohydrates in a new medicinal herbal materials.

Materials and methods. Chromatographic separation was performed using gas chromatography-mass spectrometry system Agilent 6890N / 5973inert (Agilent technologies, USA). Column capillary HP-5ms (30m × 0,25 mm × 0,25 mkm, Agilent technologies, USA). Evaporator temperature is 250 ℃, interface temperature 280 ℃ . Separation was carried out in programming mode temperature - the initial temperature of 160 ℃ was heated for 8 min., gradient from 5 ℃ / min to 240 ℃. The final temperature was kept for 6 min. Sample volume of 1 μl was injected in the split mode flow 1:50. Detection was performed in SCAN mode in the range (38-400 m / z). The flow rate of carrier gas through the column at 1.2 ml / min . Identification was performed by retention time of standards of monosaccharide and using the library of mass spectra NIST 02.

Results and discussion. For the extraction of carbohydrates were used 80% ethyl alcohol, then was got derivatives of monosaccharides in the extracts of flowers and roots of safflower.

At the same time preparing the sample without hydrolysis of inulin (without adding enzyme), which determined the content of free sugars. During previous researches it was established that the raw material also contains a disaccharide sucrose, which upon hydrolysis also liberates fructose.

The empirical conversion factor for fructose relative to inulin and sucrose (factor of conversion of inulin into fructose and sucrose into fructose) was determined by sequential processing of samples, various amounts of enzyme using ramnose as internal standard and determine the amount allocated to fructose.

Conclusions. For the first time investigated the carbohydrate composition of safflower grown in Ukraine. The studies identified carbohydrates the flowers and root of Carthamus tinctorius. For the first time in the flowers and roots of the safflower were identified: arabinose, glucose, fructose, sucrose.