DETERMINATION OF THE COMPOSITION OF SOLUBLE VITAMINS IN RAW MATERIALS OF TAGETES PATULA L. USING THE HPLC METHOD

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Relevance: In folk medicine, infusions and decoctions obtained from the inflorescences of Tagetes patula L. are widely used. The richness of the plant's composition with biological substances gives it anti-inflammatory, antibacterial, antioxidant, diuretic, sedative, and gastroprotective properties. Soluble vitamins were studied for a deeper study of the chemical composition of the raw material of the plant Tagetes patula L. for the introduction of preparations made from it into medical practice.

The absence of side effects and low cost of production of medicinal plant raw materials allows it to be widely used in the modern pharmaceutical industry in the development of drugs that combine a wide spectrum of pharmacological activity. Due to the natural and safe nature of this raw material, it is a priority in the production of effective and cost-effective medicines. In the future, the search for new sources of medicinal plants for the development of safe and effective medicines is a pressing issue, and to achieve this goal, it is necessary to expand natural raw material resources.

Objective of the study. Determination of soluble vitamins in Tagetes patula L. raw materials by HPLC method.

Materials and methods of research. The content of soluble vitamins in Tagetes patula L. raw materials was determined by the method of high-performance liquid chromatography (HPLC). The study used an Agilent Technologies 1200 chromatograph with a DAD detector, and a 75x4.6 mm Discovery HSC column was used in the analysis.

Vitamins were identified at a wavelength of 250 nm using a diode matrix detector. The flow rate was 0.8 ml/min. A mixture of acetate buffer and acetonitrile was used as an eluent.

The eluent ratio was changed as follows:

- 0-5 minutes: 96:4
- 6-8 minutes: 90:10
- 9-15 minutes: (ratio not specified - please clarify)
- 15-17 minutes: 96:4

The analysis was carried out under thermostatic conditions at room temperature. The volume of the introduced samples is 5 µl. First, working standard solutions were introduced into the HPLC system, and then solutions of the prepared samples.

Experimental part. For analysis, 5-10 g of raw material is weighed on an analytical balance, transferred to a 300 ml flat flask, and 50 ml of 40% ethanol is added to the flask. The mixture was boiled for 1 hour under conditions of vigorous stirring, equipped with a magnetic stirrer and a reverse cooler. The mixture was then stirred at room temperature for 2 hours.

The mixture is settled and filtered. Another 25 ml of 40% ethanol was added to the residue remaining in the flask, and the extraction process was repeated twice more. The obtained filtrates were combined, placed in a 100 ml volumetric flask, and filled to the line of volume with 40% ethanol (5-10%).

The resulting solution was placed in a centrifuge at a rate of 7000 rpm for 10 minutes. The top layer of the centrifugate was separated for analysis.

Working solutions of water-soluble vitamins with a concentration of 1 mg/ml were prepared.

Conclusion. Soluble vitamins in Tagetes patula L. raw materials were determined by high-performance chromatography. The content of thiamine (B1), riboflavin (B2), nicotinic acid (PP), pyridoxine (B6), folic acid (B9), and ascorbic acid was determined as follows - pyridoxine - 23.72 mg/g, riboflavin - 15.36 mg/g, and ascorbic acid - 11.6 mg/g.