Chemical Sciences

ASSEFOETIDA L., BY THE METHOD OF HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY

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Uzbekistan is a country endowed with a variety of medicinal plants with strong potential for therapeutic application, Ferula assefoetida l. is called ferula is one of the most popular medicinal herbs. It is important active ingredient responsible for the biological activity of ferula, through the major activity is anti-inflammatory. This analysis was aimed to determine analysis compound of ferulic acids analysis using high performance liquid chromatography (HPLC), LC-20 Prominence, Shimadzu, column C-18 250 x 4,6 mm, 5 mcm; acetonitrile: acetic acid: aqua bides as mobile phase, flow rate 1 ml/min and detection at 320 nm. Thus the analytical method using HPLC for ferulic acid were feasible for quantitative analysis. As a result of the research, the content of dry extract was 0,01% of the content of ferulic acid.

Keywords: Ferula assefoetida l., up-to-date circulating method, dry extract, HPLC, standard sample, Ferulic acid.

Ferula. (Ferula assefoetida L.). Ferula is an Umbrella family (Apiaceae). The Latin name of the genus comes from lat. ferula-vine, rod [1]. Its main causative agent is ferulic acid (3 methoxy-4-hydrochloric acid)- aromatic unsaturated carbonic acid, acid-acid dressing. The name came from the Ferula plant (Ferula), which belongs to the family of umbrellas. Appearance crystalline powder. Ferulic acid contains in the bark of many plants and protect them from the sun, bacteria.

From a medical point of view, it has a wide range of pharmacological action. In particular, it has an anti-inflammatory, anti-allergic, anti-tumor, anti-toxin, hepatoprotector, cardioprotector, anti-microbial, anti-viral effectirga along with antioxidant properties. As an antioxidant, it is part of many biologically active additives and cosmetic agents [4]. In industry, ferulic acid is a synthetic aromatizer, the main raw material in the production of vanillin.

Materials and methods. The research was carried out in high-performance liquid chromatography, which was performed with the diode-matrix-detector of the brand name "Shimadzu" LC-20 Prominence (2016) model [2, 3].

Preparation of the controlled solution: 1 g (exactly) of the tested solution is taken and transferred to a measuring tube with a volume of 100 ml. Hidrolized with 2,5 M of NaOH solution. pH of solution is leveled to 3.

Up to the mark was put 50 ml of water. It is processed in a ultra sound-bath. Then added ethyl alcohol to the mark of the tube and mixed. Then was passed through a membrane filter with diameter of hole 0,22 μm.

Preparation of a standard sample solution of ferulic acid: The standard sample of 3,5 mg (exactly) ferulic acid is weighed and dissolved in acetonitrile, transferred to a measuring tube in a volume of 50 ml.

Chromatography conditions: Column: C18, 250 x 4,6 mm, 5 mcm; detection: 320 nm; Mobile phase:acetonitrile and 0,5% acetic acid solution in a ratio of (38: 62); the rate of flux is 1,0 ml/min; temperature 27^0S; the volume of the sample that was injected was 10 µL.

The controlled solution and the standard sample solution of ferulic acid are chromatographed from 10 µL. The amount of ferulic acid contained in the dry extract (X, mg/g) is calculated according to the following formula:

$$X = \frac{S_1 \times m_0 \times P}{S \cdot m_1 \times 1000};$$

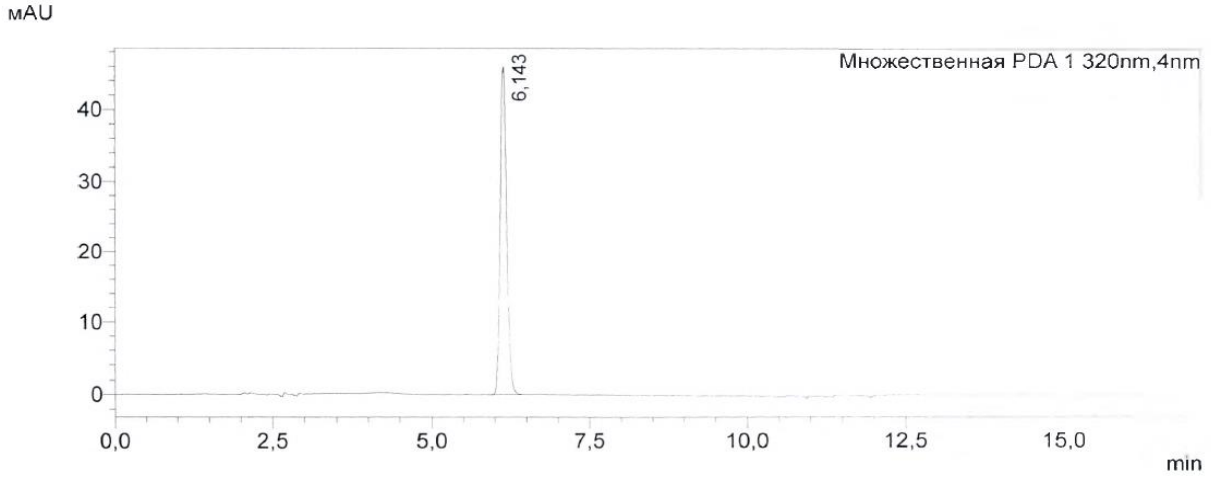
S_1- the average surface of the pherolic acid precipitate calculated from the chromatograms of the investigated solution;

m_0- ferulic acid standard sample mass, mg;

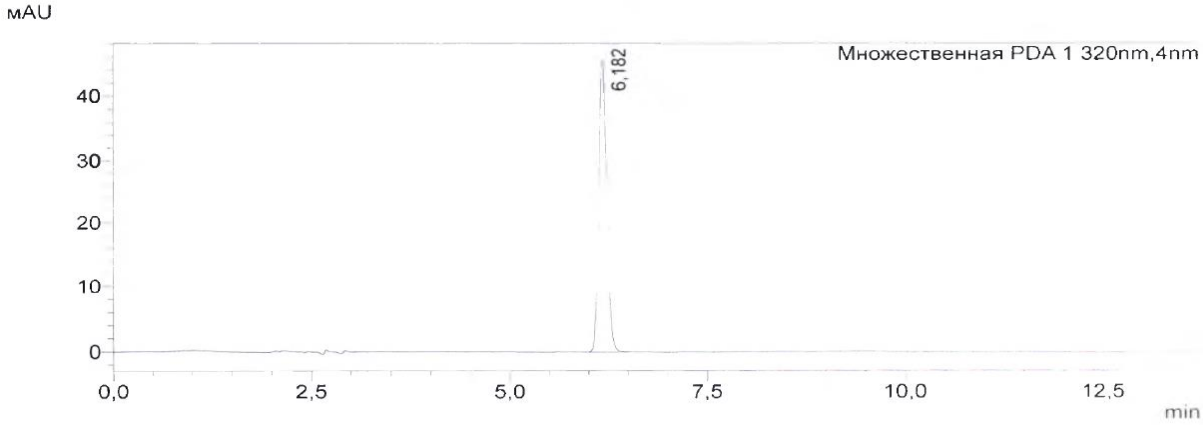
P- the activity of the standard sample of ferulic acid,%.

S_0- the average surface of the pherolic acid precipitate calculated from the chromatograms of the standard sample solution of pherolic acid;

m_1- the mass of the investigated ferulic acid, mg;



1-picture. Standard sample chromatogram



2-picture. Ferulic acid chromatogram, which is contained in the dry extract of ferula.

Conclusion. As a result of the research, the content of dry extract was 0,01% of the content of ferulic acid. The Metrological description of the results obtained was presented in Table 1.

1-table. Determination of the amount of ferulic acids contained in the dry extract of ferula and its Metrological description

Load, g.	The amount of bioactive substances detected, %	Metrological description
1,0124	0,01	$X_{total.}$=0.148 f=4 T=(95%, 4)=2.78 S^2=0.00002 S=0.0039 S_x=0.0017 $E_{total.}$=33.28
1,0017	0,012	
1,0109	0,015	
1,0102	0,017	
1,0058	0,02	

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