DETERMINATION OF BIOACTIVE SUBSTANCES IN OIL EXTRACT

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Relevance: Vitamin E is a group of important natural compounds, the basis of which is tocopherols and tocotrienols. Tocopherols are used as antioxidants, the most powerful antioxidant is δ-tocopherols. They have a strong neuroprotective, antioxidant effect, and also reduce the risk of cancer. In addition, they have an antihypoxant effect, reducing the need for oxygen in cells.

It protects cells from damage by free radicals, thereby slowing down the aging process. All compounds in this group are fat-soluble.

Vitamin E is important in dermatological practice as it is used as the main component in the elimination of various problems and in the production of cosmetics.

It improves skin nutrition, increases its elasticity and firmness, helps in wound healing and reduces dryness. It is involved in energy metabolism and facilitates the absorption of other vitamins, such as vitamin A.

Purpose of the study: The purpose of this study is to determine the amount of vitamin E in the oil extracts (ME-1 and ME-2) obtained in two different ways from the local medicinal plants: Calami rhizomata, Herba hyperici, Radices Glicyrrhizae, Herba Bidentis and fruit Fructus Rosae.

Methods and techniques: Based on the purpose of the study, an oil extract was obtained from a mixture of the above-mentioned plants in a certain ratio in two ways: in method 1, it was extracted using a simple hot maceration method and in method 2, it was extracted using sunflower oil as an extractant using ultrasound. Taking into account the use of the obtained ME in dermatology practice, liquid chromatography was used to determine the amount of bioactive substance vitamin E in its content. Chromatography was performed on a liquid chromatograph of the Agilent Technologies (USA) brand "Agilent 1260 series" with the "Chemstation 09.03.a" software, gradient pump and spectrophotometric detector. Separation was performed on an Agilent-1200-5 micron C18 column with an internal diameter of 4.6 mm, a length of 150 mm, and a sorbent particle size of 5 μm or similar. Dichloromethane (A) and acetonitrile (B) (in a volume ratio of 15:85) were used as the mobile phase. Detection was performed at a wavelength of λmax=285 nm, characteristic of α-tocopherol acetate. The eluent flow rate was 1.0 ml/min, the sample volume tested was 10 μl. The chromatography temperature was 250C. The analysis duration was 40 minutes.

Results: To prepare the test solution, 5 ml of the sample is measured into a 100 ml volumetric flask, 20 ml of isopropanol is added, mixed and the volume of the solution is brought to the mark with isopropanol. 0.050 g of α-tocaferol acetate is dissolved in isopropanol in a 50 ml volumetric flask and brought to the mark with this solvent.

According to the results of chromatography, the chromatogram of the standard α-tocopherol acetate sample showed characteristic absorption lines at 2.764 nm. The characteristic absorption lines of the ME-1 sample appeared at 2.801 nm, and the ME-2 sample appeared at 2.812 nm. The literature states that the maximum absorption lines of α-tocopherol acetate appear at 295 nm.

The amount of α-tocopherol acetate in the samples was calculated according to the formula. According to the results, the amount of α-tocopherol acetate in ME-1 obtained by ultrasonic method was higher than in ME-2 obtained by simple maceration method.

Conclusions: It was determined through experiments that the oil extracts obtained from local medicinal plant raw materials: calami rhizomata, hypericum (Herba hyperici), glycyrrhizae root (Radices Glicyrrhizae), yarrow (Herba Bidentis) and rosehip fruit (Fructus Rosae) contained 0.43% vitamin E in ME-1 and 0.51% in ME-2.