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Comparative characteristics of the properties of hemp oils from different manufacturers

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Introduction. Vegetable oils are widely used not only in the food industry, but they have long been used in medicine and pharmacy. Vegetable oils are most often used as excipients, such as bases for making ointments and liniments, as well as a solvent for oil solutions. The most used in this regard are olive and sunflower oils. Due to its high nutritional value and unique chemical composition, hemp oil has recently become popular. We were interested in comparing the quality indicators of hemp oil samples from different manufacturers for compliance with the standards.

Materials and methods. Test transparency was carried out according to the monograph of SPhU 2.0 2.2.1 "Determination of transparency and turbidity of liquids". Test relative density was also carried out according to 2.2.5 "Relative density" (method II) of SPhU 2.0 using a hydrometer.

The refractive index was determined by refractometer. Peroxide and acid numbers were also determined for all samples.

Results and discussion. We compared 3 samples of hemp oils from different manufacturers: Agrosilprom, Olibo and Stozhar. At the beginning, the general properties were checked: transparency, color, solubility, relative density and refractive index. In terms of transparency, all samples met the standard. The color was different for everyone: from yellow-green to dark green. The relative density was measured using a hydrometer with a scale from 0.880 to 0.940. It was almost the same in all samples, but the largest - 0.924 in "Stozhara". In turn, the solubility of the results of all samples were identical. All oils were soluble in petroleum ether, practically insoluble in alcohol and insoluble in water. The refractive index of the two samples had the same results – 1.475, the third sample 1.474. The acid number was determined by dissolving 10 g of oil in 50 ml of a mixture of alcohol and ether (1:1), which was previously neutralized with 0.1 g of KOH solution. The resulting mixture was then heated on a water bath and 10 drops of phenolphthalein indicator were added. After that, 0.1 M KOH was titrated until a pink color appeared. In this experiment, the results differed significantly. Agrosilprom used 1.7 ml of KOH oil, 2.7 ml of Olibo oil and 2.4 ml of Stozhara for titration. Next, the determination of the acid number was performed according to the formula. The peroxide value was determined by the method of SPhU 2.0: 5 g of oil was placed in a conical flask with a ground stopper, added 30 ml of a mixture of chloroform with glacial acetic acid (2: 3). The flask was shaken to dissolve and saturated potassium iodide solution was added, stirred again and 30 ml of water were added. The resulting solution was titrated with 0.01 M sodium thiosulfate solution until complete disappearance of the yellow color. Starch was then added and continued to titrate until the solution was discolored. A control experiment was performed in parallel. In the end, the acid number was also calculated by the formula. Two similar results were obtained in the samples "Agrosilprom" and "Stozhar", the value of the third sample "Olibo" was slightly different.

Conclusions. So, based on the results of the study, we found that in terms of general properties (transparency, solubility, relative density and refractive index, acid and peroxide numbers), all samples correspond to the requirements of SPhU 2.0.

References
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