

**STUDY OF THE SAFETY OF SHAMPOOS FROM DIFFERENT MANUFACTURERS USING ORGANOLEPTIC AND PHYSICOCHEMICAL METHODS****Lobar Ziyodova***Tashkent Chemical-Technological Institute, Tashkent***Makhmud Khamrakulov***Tashkent Chemical-Technological Institute, Tashkent***Gofurjon Khamrakulov***Tashkent Chemical-Technological Institute, Tashkent*

**Abstract:** *The article presents the results of a study on the safety of shampoos from different manufacturers. Based on organoleptic and physicochemical quality indicators, an objective assessment of shampoos is given.*

**Keywords:** *surfactants, mass fraction of chlorides, mass fraction of dry substances.*

Shampoo is one of the main and most common hair care products; it is a mixture of several substances. The largest proportion in shampoos is water, followed by surfactants. The composition also includes preservatives, fragrances, and inorganic salts. Modern shampoos often contain natural oils, vitamins, or other components which, according to manufacturers, help strengthen hair or provide some benefit to consumers. However, there is no experimental evidence supporting these claims.[1]

Despite the wide range of shampoos with different functions, their quality does not always meet consumer demand, therefore quality issues remain relevant.

Given the importance of this issue, the aim of this work was to study the quality of shampoos for normal hair from different manufacturers sold in the market of the city of Tashkent.

To assess the quality of the selected samples, organoleptic and physicochemical indicators were examined.

The quality assessment of shampoos was carried out in the laboratory of the testing center of LLC "Agro-Kimyo Standart".

**Analysis of organoleptic indicators of shampoos**

The study of shampoo packaging showed that the labeling of all samples is highly informative. Determination of the odor of shampoos showed that the first four samples have a light, pleasant smell characteristic of the sample name. Samples 5 and 6 had a very sharp odor. The color of the first sample is light pink and the consistency is thick, gel-like. The color of the second sample is pearlescent and the consistency is very thick, cream-like. The third sample is transparent in color with a gel-like consistency. The fourth sample is white in color with a jelly-like consistency. The fifth sample is transparent with a liquid consistency. The sixth sample is transparent with a jelly-like consistency.

Determination of chloride content in the studied shampoo samples

The chloride content is regulated according to GOST 26878 and equals 6.0, since exceeding it creates additional stress on the hair and may also cause irritation of the skin and eye mucosa. Chlorides are added to shampoos to provide the required consistency, usually to increase viscosity [2].

Reagents and equipment: prepared shampoo solutions, conical flask for titration, silver nitrate, potassium chromate, methyl red solution prepared as follows: 0.1 g of methyl red is dissolved in 300 cm<sup>3</sup> of ethyl alcohol and 200 cm<sup>3</sup> of water, nitric acid solution (diluted 1:4).

Procedure: In a flat-bottom flask, 2 to 5 g of the test shampoo is weighed with an error of no more than 0.005 g, dissolved in 50 cm<sup>3</sup> of water, and 2 drops of methyl red solution are added. If the solution is yellow, it is neutralized with diluted nitric acid until a pink coloration appears. Then 2.5 cm<sup>3</sup> of potassium chromate solution is added, and titration is carried out with silver nitrate solution until a brown coloration appears.

The mass fraction of chlorides in the test shampoo sample, calculated as sodium chloride (X), in percent is determined by the formula:

$$X = V * 0.584 / m$$

where V is the volume of silver nitrate solution with a concentration of 0.1 mol/dm<sup>3</sup> used for titration, cm<sup>3</sup>; m is the mass of the test shampoo sample, g;

0.584 is the conversion coefficient to sodium chloride [3].

Assessment of the mass fraction of chlorides in shampoos

Table 1.

Shampoo name	Requirement (not more than)	Actual mass fraction of chlorides, %
Avon naturals Hair care	6.0	1.2
Nivea Men	6.0	1.2
Tik-Tak	6.0	2.4
HAYAT	6.0	0.95
GUGU	6.0	0.34
FABI	6.0	1.1

Determination of the mass fraction of dry substances

The mass fraction of dry substances indicates the concentration level of detergent components in shampoo and largely determines their washing performance. To determine the mass fraction of dry substances, the MB 45 moisture analyzer by OHAUS was used.

Indicators of the mass fraction of dry substances

Table 2.

Shampoo name	GOST norms, %	Mass fraction of dry substances, %
Avon naturals Hair care	10-27	13.5
Nivea Men	10-27	19.17
Tik-Tak	10-27	11.44
HAYAT	10-27	9.52
GUGU	10-27	6.75

Shampoo name	GOST norms, %	Mass fraction of dry substances, %
FABI	10-27	8.17

Based on the results of the study of organoleptic, chemical, and physicochemical indicators of shampoos for normal hair, a comparative assessment was carried out and the following conclusions were drawn:

Determination of shampoo odor showed that Avon naturals Hair care, Nivea Men, Tik-Tak, and HAYAT have a mild and very pleasant smell, while GUGU and FABI shampoos have a very sharp and unpleasant odor.

The study of the mass fraction of chlorides (Table 1) showed that all shampoo samples comply with the requirements of GOST 26878.

The results of the study (Table 2) showed that samples 1, 2, and 3 comply with regulatory requirements for the mass fraction of dry substances, but samples 4, 5, and 6 have a lower-than-normal mass fraction of dry substances, which indicates non-compliance with regulatory requirements and directly affects shampoo quality.

#### LIST OF REFERENCES:

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