

**MINISTRY OF HEALTH OF UKRAINE  
ODESSA NATIONAL MEDICAL UNIVERSITY  
DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND DRUGS  
TECHNOLOGY**

**APPROVE**

Vice-rector for scientific and pedagogical work

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«04» September 2023

**METHODOLOGICAL DEVELOPMENT OF A PRACTICAL LESSON  
IN THE EDUCATIONAL DISCIPLINE «COSMETICS IN THE PHARMACY  
ASSORTMENT»**

Faculty Pharmaceutical Course 2

Educational discipline «Cosmetics in the pharmacy assortment»  
*(name of academic discipline)*

**Approved:**

Meeting of the Department of pharmaceutical chemistry and drug technology

Odessa National Medical University

Protocol № 1 «04» September 2023

Head of the Department \_\_\_\_\_ (Volodymyr GELMBOLDT)  
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## Practical lesson № 1

**Topic:** Cosmetology as a science. Standardization of the production and sale of cosmetic products in Ukraine and the world (2 hours).

**Purpose:** to know the definition of a cosmetic and medicinal cosmetic product and the differences between them, the classification of cosmetic products, to orientate in the active and auxiliary substances included in the composition of cosmetic and medical cosmetic products, to have an idea about the modern directions of the development of the cosmetic industry and pharmaceutical care when dispensing products medicinal cosmetics.

**Basic concepts:** cosmetic product, medicinal cosmetic product

**Equipment:** samples of cosmetic products in the pharmacy range

**I. Organizational moment (greetings, checking those present, announcing the topic of the seminar session, the purpose of the session, motivating students to study the topic).**

**II. Control of reference knowledge (written work, written test, frontal survey on basic terminology, etc.)**

Cosmetology is a branch of clinical medicine that studies the mechanism of development and nature of cosmetic skin defects, as well as develops methods and methods of their elimination, masking and prevention. History of cosmetology The birth of cosmetology took place many years ago, which was facilitated by a person's need for skin care and the desire to maintain its healthy appearance. Residents of Ancient Egypt paid special attention to this issue. They focused not only on hygienic skin care, but also showed great interest in hair and nail coloring. They used a combination of different plants to create cosmetics. Significant achievements in cosmetology were achieved by the ancient Hindus and Chinese: one of the ancient Indian authors described in his book the process of plastic surgery of the nose. The ancient Greeks and Romans also contributed to the development of this field. Oils, fats, and aromatics were produced in Greece. This is where the modern understanding of the term "cosmetics" as an art of decoration was formed. The cult of beauty and hygiene received further development in ancient Rome. Roman scientists created entire works devoted to the problems of cosmetology, one of which is the work of the ancient physician Galen, in which he divides cosmetics into those used to eliminate defects and those used to maintain natural beauty. In the Renaissance era, decorative cosmetics are actively developing, while hygiene and skin care recede into the background; at this time, such products as blushes, powders, lipsticks, creams appear in Europe. In the 16th century, the leading position in the manufacture and use of cosmetics was occupied by France, which created its own recipes for cosmetics. Despite the development of this industry, there is also

evidence of attempts to ban the use of cosmetics. One of the facts confirming this is the testimony about the law passed by the English Parliament prohibiting the use of perfumes and make-up. The 19th century was marked by the beginning of the mass production of cosmetics, which led to the emergence of modern cosmetics, the action of which is aimed not only at achieving an aesthetic effect, but also at preserving the natural health of the skin. It includes natural products: vitamins, juices, tonic substances, herbal extracts. Modern cosmetology is divided into conservative, curative and preventive, decorative and surgical. To date, this field has reached such a level that it is able to solve almost any problem related to its field. - Cabinet of therapeutic facial cosmetology. The area is at least 5-6 m<sup>2</sup> per chair. The availability of cold and hot water is mandatory. It is better to keep the design of the office in pastel colors. It is desirable that the walls, furniture, cosmetology chair, curtains or blinds are in the same color scheme. The air temperature should be comfortable for the patient. In the cold season, when the central heating does not work or its power is insufficient, it is necessary to turn on the heater, in the summer - the air conditioner. While working in a cosmetology office, a beautician must follow the sanitary and hygienic rules regulated by the regulatory documentation of Ukraine. A beautician must: work indoors and use furniture subjected to daily wet treatment; before starting work, turn on the bactericidal lamp for 1 hour; you can start work only 20 minutes after turning it off; use tools pre-sterilized or treated with disinfectants; or disposable tools, dirty laundry and used material should be stored in containers with tightly closed lids; before starting work with each patient and after work it is necessary to wash hands with soap and warm water, during some procedures repeated hand washing or treatment with antiseptics is required.

It is customary to divide cosmetology into medical and decorative. Classification I. Medical 1. Treatment: - conservative, - diagnostic, - surgical. 2. Preventive. 3. Hygienic. II. Decorative 1. Domestic 2. Theatrical The task of medical cosmetology is to ensure the normal functioning of the skin, hair and the whole body as a whole. Decorative cosmetology should emphasize beauty and make appearance defects invisible. Preventive cosmetology is aimed at preventing the manifestation of the problem. diagnostic - allows timely and correct recognition of the disease. therapeutic - solves the main problem with the help of conservative methods and surgical techniques. The quality of cosmetic products is an extremely important issue. Only vigilance, diligence and literacy of the buyer in choosing this product is not enough to protect his right to safety and quality products. For this, reliable regulatory and technical support in this field is necessary. Practical experience regarding the circulation of cosmetic products in Ukraine confirms the presence of problems in the field of state regulation in the development, production and sale of cosmetic products; the uncertainty of the rules of inspection control (supervision) of the circulation of cosmetic products on the domestic market, as well as the absence of basic essential requirements regarding the safety of cosmetic products. In order to modernize the regulatory and technical regulation of cosmetics on the domestic market, it is necessary to identify and solve the

following problems: satisfaction of consumers with safe and effective products, definition of clear rights and obligations for manufacturers and distributors, creation of a database for its registration, updating of the safety assessment procedure, standardization requirements for ingredients used, establishment of labeling requirements, instructions for use, reorganization of state market surveillance of cosmetic products, establishment of criteria for claims to minimize risks, implementation of requirements for compliance with Good Manufacturing Practices. Since cosmetics are specific in terms of assortment, purpose and application, they must be clearly distinguished from other non-food products and brought under the scope of state regulation. It is necessary to actively and responsibly implement technical regulations that would correspond to EU Directives. Of course, the foundation of the technical regulation system is measurement, in particular test methods that guarantee the development of modern, cutting-edge technologies and the production of high-quality and competitive products. At the state level, it is necessary to take care of their continuous development, to create a program for the introduction of new scientific developments.

According to research by analytical companies AlliedMarketResearch and Research and Markets (USA), skin care cosmetics have the highest share in sales volume on the world market. Cosmetic oral care products are characterized by rapid growth in consumer demand. The USA remains the largest cosmetics market in the world with a total volume of \$62 billion and a large number of employees employed in the industry - more than 63 thousand people. The countries of the Asia-Pacific region and Southeast Asia occupy 35% of the world market. According to analysts' forecasts, the realization of cosmetic products will constantly increase against the background of a stable increase in demand by increasing production capacities, expanding the range of goods and services, as well as a constantly growing staff of 126 employees employed in the industry in different countries of the world. Actual areas of development of the PKP range are anti-aging cosmetics in various forms: creams, masks, lotions, serums, etc. In the structure of demand in the cosmetic market of Ukraine, the largest share (31.8%) is occupied by the category of cosmetics for personal hygiene: foaming detergents for bath and shower, deodorants, depilatories, men's and children's skin care products. Hair care cosmetics on the domestic market make up 19.6%; from skin care – 18.4%. Another 13.6% is occupied by decorative cosmetics, and perfumery – only 11.6%. On the domestic market, imported cosmetic products make up 92% of the total volume of cosmetic products and are represented by almost all well-known global brands: Avon, Beiersdorf, Chanel, Colgate-Palmolive, Estee Lauder, Henkel-Schwarzkopf, Johnson & Johnson, L'Oreal, Mary Kay, Oriflame, Procter & Gamble, Unilever, Yves Rocher and others. Inexpensive cosmetics make up more than 60% of the market, products of the middle price segment - about 30%, premium cosmetics - about 10%. The production of cosmetics is developing very dynamically. This industry actively uses the latest developments to meet the increased demands of consumers. The formulation of cosmetic products is quickly updated, as the component content provides consumer and functional

properties of the product. Production is mainly based on the use of artificial compounds. It should be noted that such rapid development is difficult to control at the legislative level. Today, the Ukrainian cosmetic industry not only does not meet the requirements of European directives regarding the quality and safety of cosmetic products and causes mistrust of consumers, but also lacks modern regulatory and technical support, which provokes a lack of proper control and stagnation of development. With this in mind, the fight against counterfeiting remains relevant. The level of development of the Ukrainian market and the lack of transparency of trade rules in the perfumery and cosmetics industry contribute to the chaotic spread of any brands. The Ukrainian market of cosmetic products is considered the second in the world after China in terms of sales of counterfeit products; experts believe that this indicator reaches 60% of the domestic market of these goods. Since cosmetic products are a specific category of goods, the question arises of their sale only in specialized stores, paying special attention to sanitary and hygienic safety. Such stores will be able to make appropriate agreements with suppliers regarding advertising, use branded storage equipment, provide quality service and advice to consumers. The activities of specialized stores are easier to control. It is important that the authorized bodies of the executive power apply all necessary measures to ensure the circulation of only those cosmetic products that meet the established requirements. However, at present, there is no integrated system of technical regulation for the cosmetic industry in Ukraine.

State regulation of the sale of cosmetic products requires passing a series of checks to obtain relevant documents. All perfumery and cosmetic products are subject to a mandatory hygienic evaluation with a check of product samples for compliance with the norms and safety requirements established by DSanPiN 2.2.9.027-99. Sanitary rules and product safety standards of the perfumery and cosmetics industry. The hygiene certificate is issued by specialized laboratories accredited by the Ministry of Health and approved by the chief state sanitary doctor of Ukraine. It is also necessary to issue a declaration of conformity for implementation. In it, the manufacturer guarantees compliance of the products with the requirements established by the law. It is important that the manufacturer is responsible for including inaccurate data in the declaration. It is worth noting that the corresponding Technical Regulation has not yet been implemented in the cosmetic industry, so voluntary certification is also recommended in some cases. Declaration and certification of cosmetics are carried out in stages. However, in both cases, test reports are required. In fact, the same tests are carried out for hygienic assessment. It is interesting that the manufacturer must provide the test reports to the relevant body. However, goods must be tested for compliance only with national standards of Ukraine. Test protocols of foreign laboratories are not accepted. In the new edition of the List of products subject to mandatory certification, there are no cosmetic products, and in the previous one there was only a separate group of them, so distributors can continue to demand this document. The regulatory framework for the production and sale of cosmetic products in Ukraine includes more than 120 standards.

Among them, 69 are interstate (GOST) and 32 national (DSTU). It is also possible to single out a small number of standards of organizations of Ukraine, which define general technical conditions for various types of cosmetic products and original ISO standards, the recommendations of which are used in determining microbiological safety indicators. The basis of the regulatory framework is the standards for the main raw materials — essential oils, fragrances and products of their synthesis. These are 40 national and 19 interstate standards, 33 of which regulate test methods, but 16 are harmonized according to European requirements: DSTU ISO 279-2002 Essential oils. Determination of relative density at a temperature of 20 °C. Control method (ISO 279:1998, IDT), DSTU ISO 280-2002 Essential oils. Determination of refractive index (ISO 280:1998, IDT), DSTU ISO 1279:2006 Essential oils. Determination of the carbonyl number by potentiometric methods using hydroxylamine hydrochloride (ISO 1279:1996, IDT), etc. It should be noted that this is the only direction in the cosmetic industry in which enough new documentation has been developed. Test methods for other cosmetic products are established by only 11 separate interstate standards. These are documents describing the methods of determining ethyl alcohol for perfumery and cosmetic products, drop temperature, hydrogen index, emulsion stability, acid number, content of chlorides and surface-active substances, detergency for shampoos, etc. These standards are outdated and need immediate updating. After all, in accordance with the National Program for the Adaptation of the Legislation of Ukraine to the Legislation of the European Union (EU), it has been put up for discussion. Draft resolution of the Cabinet of Ministers of Ukraine "On approval of the Technical Regulation on the safety of cosmetic products". The proposed project envisages the establishment of basic requirements for the development, production, evaluation of the safety and effectiveness of cosmetic products and their introduction into circulation. The document clearly states the powers of the designated competent authorities, the principles and conditions of production, the procedure for putting into circulation and the procedures for assessing the safety of cosmetic products. The regulation establishes the conditions for control and supervision of already manufactured products and for imposing on manufacturers, importers and distributors the obligation to notify the relevant authorities in the event that their products are dangerous and to take all possible measures to reduce the negative consequences of the distribution and use of such cosmetics . The EU has a well-organized system of quality assurance, an important element of which is the Good Manufacturing Practices (GMP). In the cosmetic industry, this system provides for: clear regulation of all production processes and control of the process of releasing finished products; conducting an inspection of those stages of production that may affect quality; availability of necessary premises and equipment; provision of raw materials, packaging and other materials of the required quality, their proper storage and transportation; availability of clear and unambiguous regulatory documentation for each specific production; trained staff.

Also, the GMP practice regulates the registration of all stages of production and storage of current production documentation, taking into account the documentation on the sale of the finished product. These requirements cannot be met without a basic update of test methods, which are decades behind European ones. It should be noted that cosmetic products in the EU countries are not subject to certification and conformity assessment, since the assessment of a product sample cannot guarantee its safety for consumers. Only the manufacturer is responsible for assessing product safety. After placing the products on the market, in the event of any questions regarding its compliance with the provisions of the regulation, the individual or company that supplies the products to the market is considered responsible. In case of detection of non-conformity of products, sanctions are applied to this individual or company. Analysis of the domestic system of technical regulation of the cosmetic industry confirms the presence of a significant number of problems that prevent the implementation of the requirements of European Directives. Among them, we will highlight several important aspects. Cosmetic products are manufactured according to DSTU, SOU and TU, which are not harmonized with the European regulations by Regulation (EC) No. 1223/2009 on cosmetic products, but it is believed that these regulations set sufficient requirements for the finished product. In addition, in Ukraine there are no regulated requirements for ingredients (prohibition, restriction, permission for the use of substances, in particular dyes, preservatives, UV filters and nanomaterials). This makes the conclusions of the sanitary-epidemiological examination regarding the safety of both cosmetic products and the ingredients used questionable. Particular attention should be paid to regulatory and technical support of products based on nanomaterials. Its research and testing are currently not carried out at an adequate level, although European legislation provides for the allocation of such cosmetics in a separate group for the creation of a single registration database and continuous improvement of their tests. Another important problem of the cosmetic industry is the lack of a clear legal distinction between medicinal and cosmetic products. This provokes chaotic sales of products and manipulation of the legislative act by the manufacturer for their own benefit and misleading the consumer. A medicinal product differs from a cosmetic product in the presence of substances of curative and preventive action in the formulation. If a medicinal cosmetic is entered in the State Register of Medicinal Products, then it is a full-fledged, and not some special, medicinal product that has passed relevant preclinical and clinical tests and examination of registration materials by the State Pharmacological Center of Ukraine, since there is no separate special procedure for the registration of medicinal cosmetic products exist. The criterion that classifies them as medicinal products is the presence of individual substances or their combination used for therapeutic or prophylactic purposes, and the criterion that classifies them as cosmetic products is the presence of a cosmetic effect, but the first criterion is decisive. A medicinal product may have an additional cosmetic effect, but declaring the therapeutic and preventive effect of a cosmetic product is inadmissible. Thus, the term



"medicinal cosmetic" does not have a clear interpretation today. Despite this, there is a large number of products on the market for which a therapeutic effect is declared, but it is not registered as a medicinal product. Medicinal cosmetics are usually produced by pharmaceutical laboratories that use advanced technologies and have their own research base. In Ukraine, the certification of cosmetics is carried out by several laboratories that are included in the special list of the Ministry of Health.

And since medical cosmetics do not officially exist in our country, they certify them in the same way as any other cosmetics. However, the concept of effectiveness of a cosmetic product as a medicinal product is legally absent. This terminological inconsistency arose due to the imperfection of the legislation, so its contradiction must be taken into account and corrected both during the amendment of regulatory documents for medicinal products, the Law of Ukraine "On Medicinal Products", and during the preparation of the Technical Regulation on the safety of cosmetic products.

### **Questions (test tasks) to check basic knowledge on the topic of the seminar:**

#### **Answer the question**

1. The main stages of the development of cosmetology. History of cosmetology. Stages of the development of cosmetology in different historical periods to the present day.

2. The purpose and tasks of the discipline. Basic concepts and terms of the technology of perfumery and cosmetic products.

3. Define the terms cosmetics and medicated cosmetics. The difference between such concepts as cosmetics and medicated cosmetics, their meaning and characteristics.

4. Standardization of the production and sale of cosmetic products in Ukraine and the world.

5. Sanitary and hygienic examination of cosmetics.

6. Toxicological and hygienic indicators, safety standards and criteria for quality indicators of cosmetic products. Certification of cosmetic products.

### **III. Discussion of theoretical issues**

1. Types of regulatory documents. Definition. Categories. National Standards of Ukraine. Definition. Mandatory requirements of DEST, approval procedure.

2. Technical conditions. Definition, requirements for the development of technical specifications, constituent parts. Sanitary and hygienic examination of regulatory documentation. Examination procedure. The conclusion of the state sanitary and hygienic examination of regulatory documentation. Order of receipt.

3. Technological and technical regulation. Technological instructions. Definition. Structure.

4. Safety assessment of perfumery and cosmetic preparations.

5. Sanitary rules and safety norms of perfumery and cosmetic products. The procedure for conducting research.

6. The procedure for obtaining a permit for the production and sale of perfumery and cosmetic products. Documentation required. Certification.

7. The procedure for importing imported products into Ukraine. The current state and trends in the development of perfumery and cosmetic production abroad and in Ukraine.

8. Promising cosmetic products and forms.

**Discussion of theoretical issues can take place in the form of answers to questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of student answers, etc.**

**Topics of reports/abstracts:**

1. Cosmetology as a science. Standardization of the production and sale of cosmetic products in Ukraine and the world.
2. The main stages of the development of cosmetology. History of cosmetology. Stages of the development of cosmetology in different historical periods to the present day.
3. Types of regulatory documents. Definition. Categories. National Standards of Ukraine. Definition. Mandatory requirements of DEST, approval procedure.

**List of recommended literature:**

**Main:**

1. Пешук Л. Технологія парфумерно-косметичних продуктів. Навчальний посібник. Видавництво: Центр навчальної літератури. – 2019. – С. 376.
2. Технологія та застосування лікувально-косметичних засобів. Навчальний посібник / О. В. Федорова, Р. О. Петріна, Н. Л. Заярнюк, В. В. Гавриляк, А. О. Милянч, В. П. Новіков. Львів : Видавництво Львівської політехніки, 2019. - 244 с.
3. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
4. Посилкіна О. В., Котлярова В. Г., Четчка О. В. Методичні рекомендації щодо оптимізації асортименту лікарських косметичних засобів в аптечних закладах : наук.-метод. рек. Харків : НФаУ, 2019. 31 с.
5. Технологія лікувально-косметичних засобів: навчальний посібник / упоряд.: Борисюк І. Ю., Фізор Н. С., Валіводзь І. П., Акішева А. С.. Одеса, ОНМедУ, 2020.-52 с.

**Additional literature**

1. Розроблення концептуальних підходів до регулювання обігу косметичної продукції в Україні / І. С. Казакова, С. М. Коваленко, В. О. Лебединець, В. С. Казакова. *Вісник фармації*. 2021. № 2. С. 63-74.
2. До обґрунтування альтернативного методу визначення токсичності парфумерно-косметичної продукції методом «in vitro» на короткочасній суспензійній культурі клітин — сперматозоїдах великої рогатої худоби (огляд літератури) / Т. Ф. Харченко, В. М. Левицька, О. А. Харченко та ін. *Сучасні проблеми токсикології, харчової та хімічної безпеки*. 2018. № 2-3. - С. 92- 95.
3. Гіалуронова кислота: біосинтез та використання / І. В. Лич, А. О. Угрин, І. М. Волошина. *Український біофармацевтичний журнал*. 2019. № 2. С. 6-13.
4. Zujkina S.S. The pharmacotechnological studies of the phytoppecies composition for the complex therapy of mastopathy / S.S. Zujkina, L.I. Vishnevskaya. *Вісник фармації*. 2017. № 2 (90). С. 43-47.
5. Ігнашкіна Т. Б., Душина Л. М., Москалець Т. А. Світовий ринок парфумернокосметичної продукції: сучасні тенденції та перспективи розвитку. *Інфраструктура ринку*. 2020. Вип. 41. С. 87-93.

6. Лівінський А. І. Державне регулювання, сертифікація виробництва та реалізація органічної продукції в Україні. *Бізнес Інформ*. 2020. № 6. С. 167-173.
7. Consumption and exposure to finished cosmetic products: A systematic review / A.S. Ficheux, M.P. Gomez-Berrada, A.C. Roudot, P.J. Ferret. *Food Chem Toxicol*. 2019. Vol. 124. P. 280-299. doi: 10.1016/j.fct.2018.11.060.
8. Continuing animal tests on cosmetic ingredients for REACH in the EU. / J. Knight, C. Rovida, R. Kreiling, et al. *ALTEX*. 2021. Vol. 38(4). P. 653-668. doi: 10.14573/altex.2104221.
9. COSMOS next generation - A public knowledge base leveraging chemical and biological data to support the regulatory assessment of chemicals / C. Yang, M.T. Cronin, K.B. Arvidson, et al. *Comput Toxicol*. 2021. Vol. 19. P. 100 -175. doi: 10.1016/j.comtox.2021.100175.
10. Experiments in the EpiDerm 3D skin in vitro model and minipigs in vivo indicate comparatively lower in vivo skin sensitivity of topically applied aneugenic compounds / M. Schuler, L. Tomlinson, M. Homiski et al. *Toxicological Sciences*. 2021. Vol. 180, Iss. 1. P. 103–121. <https://doi.org/10.1093/toxsci/kfaa189>
11. Skin safety and health prevention: an overview of chemicals in cosmetic products / A. Panico, F. Serio, F. Bagordo et al. *J. Prev. Med. Hyg*. 2019. Vol. 60 (1). P. E50-E57. doi: 10.15167/2421-4248/jpmh2019.60.1.1080.
12. Zaporozhska S Development of foaming shampoo base for the treatment of Seborrheic Dermatitis./ Baranova I, Zaika S, Bezpala Y, Roik O, Zaporozhska S, Shostak L. *Journal of Advanced Pharmacy Education & Research*. 2020. № 10. 143 149.
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14. Rybachuk V.D., Samodurova A.V. DEVELOPMENT OF COMPOSITION OF DERMATOLOGICAL CREAM WITH JOJOBA OIL AND D-PANTENOL //Науковий підхід до сфери практичної косметології: актуальні питання й тренди : матеріали Міжнародної науково-практичної конференції (11 березня 2020 р., м. Харків). – Х.: НФаУ, 2020. – С. 22-26.
15. Біофармацевтичні та структурно-механічні дослідження гелю для лікування вугрової хвороби / Гербіна Н.А., Шабан С.О. // Технологічні та біофармацевтичні аспекти створення лікарських препаратів різної направленості дії: матеріали IV Міжнародної науково-практичної інтернет – конференції (м. Харків, 14-15 листопада 2019 р.) – Х. : Вид-во НФаУ, 2019.. С. 75-76.

### **Electronic information resources**

1. [Department of pharmaceutical chemistry and drug technology of ONMedU](#) – website of the Department of pharmaceutical chemistry and drug technology of ONMedU

2. [Scientific library of ONMedU \(odmu.edu.ua\)](http://odmu.edu.ua) - Scientific library of ONMedU
3. [www.moz.gov.ua](http://www.moz.gov.ua) – official website of the Ministry of Health of Ukraine
4. [Odessa National Medical University \(onmedu.edu.ua\)](http://onmedu.edu.ua) – ONMedU official website
5. State Register of Medicinal Products of Ukraine. - [Electronic resource]. - Access mode: <http://www.drlz.com.ua/> – as of 10.01.2017.

## **Practical lesson № 2**

**Topic:** Safety of use of cosmetic products and methods of its research (4 hours).

**Purpose:** get acquainted with the classification and nomenclature of pharmaceutical cosmetic products, the types of action of medicinal cosmetic products, get acquainted with the anatomy, histology, physiology, biochemistry of the skin; anatomy and physiology of skin appendages (sweat and sebaceous glands, hair, nails), clinical characteristics of the main types of skin and methods of its determination; clinical characteristics of the skin according to the degree of elasticity, from the appearance of the relief, according to the level of blood supply and methods of their determination; cosmetology aspects of hair morphology and physiology, methods of determining hair type.

**Basic concepts:** skin, dermis, sweat glands, sebaceous glands, cosmeceuticals.

**Equipment:** samples of cosmetics in the pharmacy assortment.

### **I. Organizational moment.**

### **II. Control of reference knowledge**

#### **2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

##### **Requirements for theoretical knowledge:**

Normative documents for domestic products of the perfumery and cosmetics industry (DSTU, industry standards, TU, etc.) must contain requirements for safety for human health, regulated by DSanPiN. Safety indicators of specific assortment groups and types of products are finally established at the stages of development of a regulatory document at the stage of state sanitary and hygienic examination. Safety indicators for human health of imported products, which differ significantly from products of domestic production in terms of assortment group, type or raw materials used, are determined by the chief state sanitary doctor of Ukraine. Mandatory toxicological and hygienic indicators of safety for human health of products of the perfumery and cosmetics industry include:

Index of "acute" toxicity when applied to the skin.

Index of "chronic" toxicity when applied to the skin.

Skin irritation index.

Index of irritant action on the mucous membrane of the eyes.

Sensibilizing effect index. Index of "acute" toxicity when administered into the stomach.

Index of "chronic" toxicity when injected into the stomach. The above indicators are determined according to approved methods; the results are evaluated in the appropriate points (mostly from 0 to 4), the values of which depend on the degree of product toxicity.

DSanPiN do not apply to medicinal cosmetics. They also provide a list of medicinal substances that are not allowed to be introduced into cosmetic products, since the introduction of these substances transforms cosmetics into medicinal cosmetics, the production, sale and use of which are covered by regulatory documents on medicinal products. Such medicinal substances include, in particular, substances with an androgenic effect, estrogens, glucocorticoids, antibiotics, sulfonamide drugs and their derivatives, furazolidone, atropine, iodine, etc. The toxicological and hygienic indicators of medicinal cosmetics are studied at the stage before the clinical study of the created medicinal cosmetic product. Their list is determined by the Procedure for conducting a clinical study of medicinal products. Preclinical study of medicinal products involves the implementation of chemical, physical, biological, microbiological, pharmacological, toxicological and other scientific studies with the aim of establishing specific and general pharmacological activity, as well as the harmlessness for the body of active substances and finished medical cosmetics. Microbiological indicators and safety standards of cosmetics and medical cosmetics are based on the absence or limitation of the level of content of pathogenic, conditionally pathogenic for human health and sanitary-indicative microorganisms. These indicators must guarantee product safety during the storage period. Cosmetic and medical cosmetic products can be contaminated with microorganisms both during the production process and during their use. Sources of pollution: raw materials, production facilities, equipment, packaging materials, personnel, storage conditions, method of application, etc. The safety of cosmetic products according to DSanPiN regarding microbiological purity is characterized by the following mandatory indicators:

Number of mesophilic aerobic and facultatively anaerobic microorganisms in 1 g or 1 cm<sup>3</sup> of product.

The amount of *Candida* yeast and molds in 1 g or 1 cm<sup>3</sup> of product.

Number of Enterobacteriaceae bacteria.

Number of *Staphylococcus aureus*.

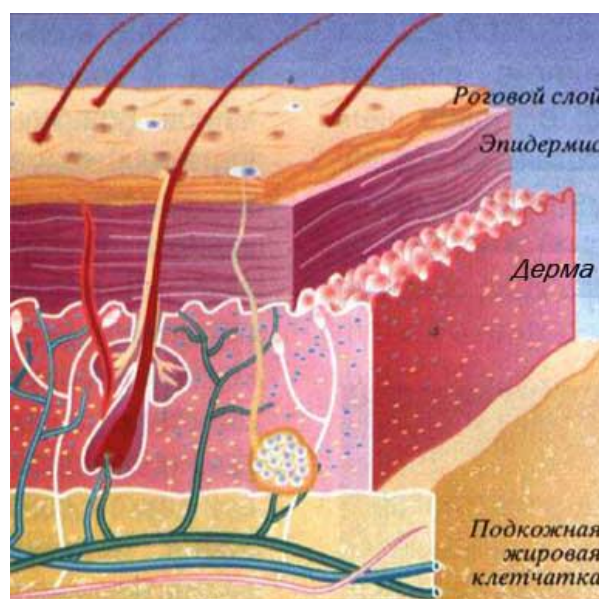
Number of *Pseudomonas aeruginosa*.

The requirements for safety indicators of specific assortment groups (types) of products depend on their purpose. Yes, according to DSanPiN 2.2.9.027 - 99 for cosmetic creams for the care of the skin of the face, hands and body (with the exception of children's creams), foot creams, creams for and after shaving, lotions, the number of mesophilic

aerobic and facultatively anaerobic microorganisms is not should be more than 1000 CFU/g (cm<sup>3</sup>), and the amount of yeast and mold fungi - more than 100 CFU/g (cm<sup>3</sup>). Norms of microbiological safety indicators for cosmetic and medicated cosmetic products differ significantly. The microbiological purity of medicated cosmetic products as ready-made medicinal products for local use according to the Federal Drug Administration imposes the following requirements: Total number of viable aerobic microorganisms: no more than 100 microorganisms (bacteria and fungi in total) in 1 g, 1 cm<sup>3</sup>. Absence of enterobacteria and some other gram-negative bacteria in 1 g, 1 cm<sup>3</sup>. Absence of *Pseudomonas aeruginosa* in 1 g, 1 cm<sup>3</sup>. Absence of *Staphylococcus aureus* in 1 g, 1 cm<sup>3</sup>.

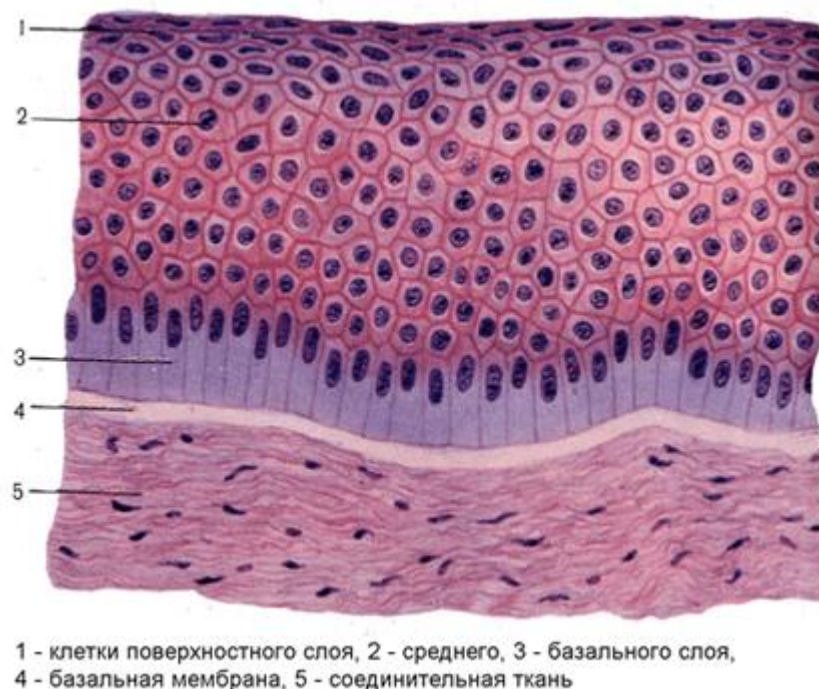
Labeling of cosmetic products in Ukraine is carried out in accordance with national regulations, as well as the requirements of Directive 76/768 EEC on cosmetic products. Since 1997, an amendment has been introduced into European legislation, according to which manufacturers are required to indicate on the labels a complete list of ingredients included in cosmetic products. The mentioned requirements of the European cosmetic legislation indicate a serious attitude towards cosmetology, and also bring cosmetics closer to medical preparations. EU legislation provides certain requirements for labels on cosmetic products. In particular, the information on the packaging (container) must be clear, legible and visible. The name and address of the manufacturer, nominal mass or volume of the product, composition, expiration date, conditions of use and warnings must be indicated. In accordance with the requirements of the mentioned directive, the list of ingredients is given in descending order of their quantity. The names of the ingredients are given according to the International Nomenclature of Cosmetic Ingredients (INCI).

Skin structure. The secret of the amazing multifunctionality of the skin lies in its structure. The skin consists of 3 important layers:



1. Outer layer - epidermis,
2. Inner layer - dermis,
3. Subcutaneous base – hypodermis

Each layer performs a specific function. The thickness and color of the skin, the number of sweat, sebaceous glands, hair follicles and nerves are not the same in different parts of the body. The thickness of the skin is only a few millimeters, but if the skin constantly needs protection, then it becomes thicker, this is a protective mechanism that everyone has. Therefore, the skin is thicker in some places, thinner in others. The soles and palms have a denser epidermis and a layer of keratin. Depending on the structure, the epidermis can be conventionally divided into five main zones (layers): basal, spiky, granular, shiny and horny. The upper (outer) layer of the epidermis consists of already dead cells without nuclei, the inner layer consists of living cells that are still capable of division. Fragments of the horny, shiny and granular layers, which do not have the ability to divide, can also be attributed to those structures of the skin, and, accordingly, the border between "living and dead" substances should be located somewhere in the spinous layer.



Directly under the epidermis is the papillary (or papillary) layer and deeper below it - the reticular layer. Many blood vessels and capillaries penetrate the dermis. In addition, the middle layer of the skin is also provided with lymph, it contains hair follicles, sweat ducts and sebaceous glands. There are no sebaceous glands on the feet and palms. Sweat glands are divided into apocrine and eccrine. Eccrine glands are located everywhere on the body, except for the lips, glans penis and labia minora. There are especially many eccrine glands on the palms, feet, forehead, chest, abdomen, and shoulder girdle. Apocrine glands are located under the armpits, around the anus, in the area of the nipples and external genitalia in women, in the groin and around the navel. Apocrine glands lie deep in the fat layer and begin to work only with the onset of puberty. The function of the skin in human life is extremely important, because it serves as a barrier between the body and the external environment and provides protection for internal organs. The skin protects tissues and

organs from mechanical damage (impacts, friction, etc.) thanks to the content of the middle layer of collagen and elastic fibers and subcutaneous fatty tissue. Since the stratum corneum is a poor heat conductor, it protects the deeper layers from drying out. The pigment substance melanin absorbs ultraviolet rays, thereby protecting the body from harmful radiation. The acidity level of the skin (pH) is 5.0-6.0, which helps to neutralize chemicals and destroy harmful microbes. The same function is performed by the sebaceous and sweat glands, which means that excessively frequent washing can lead to a weakening of the skin's protective function. The skin is an organ of human senses. Through it we feel pain, touch, pressure, vibration, heat and cold. In addition, the skin also performs secretory and excretory functions. The chemical composition of human sweat varies depending on the general condition of the person and the amount of sweat secretion. So, in the case of metabolic diseases, substances are found in the composition of sweat, which are not present there in a normal state (for example, sugar in patients with diabetes). The skin helps to remove arsenic, iodine, bromine, quinine and other substances from the body. On the surface of the skin, sweat and sebum mix, forming a thin layer of water-fat emulsion, which helps to maintain the normal state of the skin. The work of sweat and sebaceous glands is regulated by the nervous system, sex hormones, thymus gland and adrenal cortex. The process of breathing also occurs through the skin. Compared to the lungs, the volumes of consumed oxygen and carbon dioxide, which, of course, are very small - only 1/180 and 1/90, respectively. At the same time, during the day, 800 grams of water vapor is released through the skin, which is 2-3 times more than through the lungs. The skin does not absorb water, but absorbs fat-soluble substances. The skin also plays an important role in metabolism. Keratin, melanin and vitamin D are produced in the skin, metabolic processes involving water, fats, proteins, carbohydrates, hormones, enzymes, vitamins and trace elements take place. Thus, the function of the skin in our body is no less important than the functions of other organs! The skin is a mirror of the body, take care of it!

Clinical characteristics of the main skin types. Differentiation of the skin by type is based on its anatomical and physiological features and depends on the area of localization, age, gender, etc. Normal skin has a smooth matte surface, sometimes with a slight shine in the middle part of the face, due to the large size of the mouths of the excretory ducts of the sebaceous glands and their number on the forehead, nose, and chin. For the same reason, the middle part of the face is characterized by more visible pores. Dry skin is smooth, matte, often with a very thin epidermis, through which a network of blood vessels shines through, the number of which is greater in the areas of the cheeks and forehead. Typical microporosity appears very fine. There are dry, thin scales, mainly on the forehead and cheeks. Oily skin has an uneven, scaly surface, an oily sheen, especially in the middle part of the face, well-defined pores, especially on the nose and chin, which gives it a rough relief. Blood supply through the thickened epidermis is poorly expressed and mostly reduced, the color of the skin is yellowish. Mixed skin type is characterized by the presence of signs of



two or three skin types. The "fat" and "dry" types are mostly combined. Depending on their ratio, the terms "mixed type with a tendency to normal, oily or dry type" are used. Mixed type with a tendency to normal - the skin has mostly signs and forms of normal skin. Possible options: forehead, nose, chin - normal, cheeks - dry; forehead, cheeks, chin - normal, neck - fat.

Cosmeceuticals is a combination of cosmetics and pharmacology. Cosmeceutical products are such cosmetic products with biologically active ingredients that are likely to have medical or medicinal benefits. Research in the field of dermatology suggests that bioactive ingredients used in cosmeceuticals are more beneficial than moisturizing creams. However, apart from the benefits of some cosmeceutical products, there are no requirements to prove that these products are what they say they are. The label "cosmeceutical" refers to such products that belong to topical products such as: creams, lotions and ointments. Products that have similar purported benefits but are taken orally are called nutricosmetics.

## **2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question

1. Cosmetology as a science.
  2. Anatomical and histological structure of the skin, its blood supply and innervation.
  3. Anatomy, histology of skin appendages - sebaceous and sweat glands, hair, nails.
  4. Biochemistry of the skin and its appendages.
  5. Physiology of the skin and its appendages.
  6. Clinical characteristics of the main types of facial skin.
  7. Methods of determining skin type.
  8. Clinical characteristics of the skin of the face according to the degree of elasticity and methods of its determination.
  9. Clinical characteristics of the skin of the face from the appearance of relief and methods of its determination.
  10. Clinical characteristics of the skin of the face with the level of blood supply and methods of its determination.
  11. Cosmetological aspects of hair morphology and physiology.
  12. Methods of determining hair type.
- B. Tasks for self-control.
1. To study the anatomical structure of the skin and its appendages.
  2. Draw the structure of the epidermis, dermis, hypodermis.
  3. Draw the structure of skin appendages: sweat glands, sebaceous gland, nail hair.

## **III. Formation of professional skills and abilities:**

3.1. Content of the task of practical work:

Content of the task of practical work:

Task 1. Determine skin type by visual method.

Task 2. Determine the type of skin using an oiliness test.

Task 3. Determine the degree of elasticity of the skin using a rotational compression test.

Task 4. To determine the degree of elasticity of the skin using a test for the formation of a skin fold.

Task 5. Determine the skin from the appearance of the relief by a visual method.

Task 6. Determine the skin with the level of blood supply by visual method.

Task 7. Determine the skin with the level of blood supply by diascopy method.

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

**2.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

Questions for the oral survey:

1. What are the main functions of the skin and its appendages?

2. Describe the 5 layers of the epidermis.

3. Describe normal dry, oily and mixed skin types.

4. Give a clinical description of skin with normal, reduced tone, atopic skin.

5. Give a clinical description of the skin according to the type of relief, according to the blood supply.

6. Methods of determining skin type.

7. Cosmetological aspects of hair morphology and physiology.

8. Method of determining hair type.

9. The rational use of medical cosmetics and therapeutic cosmetic procedures for the purpose of treatment and prevention of pathological conditions of the skin and its appendages is: a) hygienic cosmetic care b) decorative cosmetic care c) therapeutic cosmetic care

#### **IV. Summing up**

##### **List of recommended literature:**

###### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.

2. Тихонов, О. І. Аптечна технологія ліків / О. І. Тихонов, Т. Г. Ярних. – Вінниця: Нова книга, 2016. – 536 с.

3. Посилкіна О. В., Котлярова В. Г., Чечетка О. В. Методичні рекомендації щодо оптимізації асортименту лікарських косметичних засобів в аптечних закладах : наук.-метод. рек. Харків : НФаУ, 2019. 31 с.

4. Технологія лікувально-косметичних засобів: навчальний посібник / упоряд.: Борисюк І. Ю., Фізор Н. С., Валіводзь І. П., Акішева А. С.. Одеса, ОНМедУ, 2020.-52 с.

###### **Additional literature**

1. Фармацевтична енциклопедія / Голова ред. ради та автор передмови В. П. Черних. – 3-тє вид., переробл. і доповн. – К.: «МОРІОН», 2016. – 1952 с.
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3. Практикум з аптечної технології ліків: навч. посіб. для студ. вищ. навч. закладів / О.І. Тихонов, С.О. Тихонова, О.П. Гудзенко та ін.; за ред.. О.І. Тихонова, С.О. Тихонової. – Х.: Оригінал, 2014.-448 с.
4. Екстемпоральні прописи для терапії дерматологічних захворювань : навч. посіб. для студентів медичних та фармацевтичних вузів / Н. П. Половко, Л. І. Вишневська, Т. М. Ковальова та ін. – Х. : Вид-во НФаУ, 2017. – 91 с.
5. Технологія виготовлення екстемпоральних лікарських апіпрепаратів і їх застосування в фармації, медицині та косметології : методичні рекомендації / О. І. Тихонов, Т. Г. Ярних, С. О. Тихонова, О. С., О. Г. Башура, О. С. Шпичак, Л. О. Бондаренко, П. С. Сирота, Б. Т. Кудрик, Р. І. Скрипник, Тихонов, Н. С. Богдан, С. Г. Бобро, Л. В. Каношевич, О. Є. Богуцька; за ред. О. І. Тихонова. – Х. : Изд-во НФаУ, 2016. – 75 с.
6. Технологія виготовлення порошків : навч. посібник / Л. Л. Давтян, Р. С. Коритнюк, О. І., А. О. Дроздова, І. О. Власенко, З. В. Маленька, В. П. Попович, В.В. Гладішев, С. М. Мусоєв, Т. Ф. Оліфірова, Л. І. Вишневська, О. М. Глущенко, О. О. Хомич; за ред. Л. Л. Давтян, Р. С. Коритнюк.. – К.: «Освіта України», 2016. – 141 с.
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10. Recent Trends of Treatment and Medication Peptic Ulcerative Disorder / D. Bhowmik, Chiranjib, K. K. Tripathi [et al.] // International Journal of PharmTech Research. – 2010. – Vol. 2. – P. 970–980
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14. Маркетинг у фармації та парфумерно-косметичній галузі: навчально-методичний посібник для самостійної роботи студентів фармацевтичного факультету спеціальності «Технології парфумерно-косметичних засобів», / Н.О. Ткаченко., В.О. Демченко, Н.М. Червоненко, Т.П.Зарічна. - Запоріжжя: ЗДМУ, 2016. - 100 с.

### **Electronic information resources**

1. [Department of pharmaceutical chemistry and drug technology of ONMedU](#) – website of the Department of pharmaceutical chemistry and drug technology of ONMedU
2. [Scientific library of ONMedU \(odmu.edu.ua\)](#) - Scientific library of ONMedU
3. [www.moz.gov.ua](#) – official website of the Ministry of Health of Ukraine
4. [Odessa National Medical University \(onmedu.edu.ua\)](#) – ONMedU official website
5. State Register of Medicinal Products of Ukraine. - [Electronic resource]. - Access mode: <http://www.drlz.com.ua/> – as of 10.01.2017.

### **Practical lesson № 3**

**Topic:** Ingredients of cosmetics. The principles of choosing ingredients depending on the type of skin and the purpose of the cosmetic product (4 hours).

**Purpose:** familiarize yourself with the modern definition of active and auxiliary substances that are part of medicinal cosmetics, study their classification and characteristics, with biologically active substances of plant origin as active components of cosmetics, with the main stages of composition of cosmetic formulations depending on skin types, know the classification of auxiliary substances, included in cosmetic preparations; main groups of substances and their characteristics; characteristics of BARs included in cosmetic products; characteristics of auxiliary substances used in the formulation of cosmetic preparations; characteristics of auxiliary substances used in the industrial production of cosmetics.

**Basic concepts:** enhancers, preservatives, antioxidants, dyes.

**Equipment:** samples of cosmetic products in the pharmacy range

**I. Organizational moment.**

**II. Control of reference knowledge**

**2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

**Requirements for theoretical knowledge:**

Modern cosmetics can do a lot for the skin - protect it from aging, revive the complexion, reduce wrinkles, lighten pigmentation, make the skin healthier and more resistant to external influences. But all this is provided that the cosmetics are selected correctly. On the contrary, incorrectly selected cosmetics can accelerate skin aging, cause inflammation, irritation, peeling of the skin and other problems. In order to understand what the world of modern cosmetics is, let's turn to the origins of cosmetology. The origins of cosmetology lie in several areas. First of all, it is, as in our days, applied certain compositions

to the skin in order to increase attractiveness and mask defects (for example, wrinkles). This direction is still very strong in cosmetology. There is nothing wrong here, you just need to understand that products that give an instant improvement in the appearance of the skin and mask its defects may not do anything else. When choosing cosmetics of this category, you only need to make sure that it copes well with its task and does not have a harmful effect on the skin. Cosmetic products should also include soaps and other products used to clean the skin, as well as fragrances that mask unpleasant body odors. Some people are still convinced that the smell of perfume or cologne can drown out the smell of a poorly washed body, but mostly in modern society it is customary to wash quite often. As we will soon see, frequent washing with soap is dangerous for the skin, so thorough but gentle cleansing of the skin is now considered one of the main components of cosmetic care. The next direction is skin protection. Since ancient times, people have used vegetable and animal fats, plant extracts to protect the skin from frost, dry wind, minor injuries, insect bites, etc.

In modern cosmetology, this direction is gaining more and more importance as science accumulates more and more data about what actions damage the skin, as well as about what substances are able to counteract harmful factors acting on the skin. According to modern concepts, it is the damage and wear of skin structures during life that is the basis of its premature aging. Therefore, one of the most important (and most real) tasks of cosmetics is to reduce the number and intensity of harmful factors acting on skin cells. And, finally, one more field of application of cosmetics, the most controversial, shrouded in myths and legends, and which causes violent disputes - prevention and treatment of skin diseases, restoration of the harmony of the physiological processes of the skin, its rejuvenation. Near the origins of this trend are magic, alchemy and folk medicine. Let's start with the well-known natural oils. Natural oils are complex mixtures consisting of saponifiable and non-saponifiable fractions. Saponable fractions are those components from which, by adding alkali, soap can be obtained. From a chemical point of view, these are fatty acids connected to glycerol. The appearance and properties of the oil depend on the fatty acids. Fatty acids are divided into saturated and unsaturated. The oil contains mostly saturated fatty acids and will be solid at room temperature. The more unsaturated acids in the oil, the softer it will be, if unsaturated acids predominate, the oil will be liquid. Oleic acid, which belongs to the so-called monounsaturated fatty acids, has special properties. Oils containing a lot of oleic acid are well absorbed into the skin and enhance the penetration of other active components into it. In addition, unsaturated fatty acids, which are not synthesized in the human body, deserve attention - essential fatty acids. These are linoleic, linolenic and gamma-linolenic acids, as well as their derivatives. Oils containing linoleic and gamma-linolenic acids (they are also called omega-6 acids) are recommended for dry skin with impaired barrier properties. Oils containing linolenic acid and its derivatives (some linolenic acid derivatives are difficult to name and for simplicity are called omega-3 acids) have anti-inflammatory properties and are recommended

Important characteristics of the oil

are its absorption by the skin and spreading. If the oil is poorly absorbed, it will remain on the surface of the skin for a long time and create the impression of oiliness. However, very well absorbed oil can be comedogenic. If the oil does not spread well, it will not be distributed well on the skin. Usually in cosmetics, a combination of several oils is used, selected in such a way that the absorption and spreading of the mixture are optimal. Let's consider some oils that can be used in their pure form or mixed with other oils.

Avocado oil (avocadooil, *PerseaGrattisima*) - softening, moisturizing, regenerating effect. It is well absorbed and distributed. It is especially recommended for the care of dry, damaged and withered skin. Apricot oil (apricot oil, *Prunus Armeniaca*) has a softening, moisturizing effect. It spreads well on the skin. Traditionally recommended for the care of delicate children's skin. Peach oil (peachkerneloil, *PrunusPersica*) - well moisturizes and softens the skin. It is rarely used in its pure form, usually mixed with other oils. Often included in dermatological formulations. Blackcurrant seed oil (blackcurrantseedoil) is a healing oil. Contains essential fatty acids omega-6 and omega-3, rich in gamma-linolenic acid. It is used to restore dry, scaly, irritated skin and in the complex therapy of skin diseases. Grape seed oil (grapeseedoil, *VitusVinifera*) - softens and moisturizes the skin. The unsaponifiable fraction contains antioxidants. Usually used as a base oil in a mixture with essential oils. Wheat germ oil (wheatgermoil, *TriticumVulgare*) - regenerating, moisturizing, softening effect. Especially recommended for mature or withered. Contains many non-soap substances, including vitamin E. Evening primrose oil (eveningprimroseoil, *OenotheraBlennis*) is a medicinal oil. Contains essential fatty acids omega-6 and omega-3, rich in gamma-linolenic acid. It is used to restore dry, flaky, irritated skin and in the complex therapy of skin diseases. Jojoba oil (jojoba oil, *Simmondsia Chinensis*) is a liquid wax that has good conditioning properties. When applied, it forms a thin, semi-permeable film that softens the skin and helps it retain moisture. Cocoa butter (cacao butter, *Teobroma Cacao*) is a semi-solid oil that has long been used in cosmetology. Softens and moisturizes the skin. Coconut oil (copra oil, *Cocos Nucifera*) is a solid oil that has long been used in cosmetology. Softens and moisturizes the skin. Ginkgo preparations (*Ginkgobiloba*) are well known as nutritional supplements for the treatment of dementia and memory loss, but in addition, they can slow down skin aging. Another reason for using ginkgo extracts in cosmetics can be its antioxidant and anti-inflammatory properties. Pretreatment with ginkgo flavonoids (quercetin and sciadopithisin) reduced fibroblast death induced by UVB irradiation.

## **2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question

1. BAR used in cosmetology.
2. Medical cosmetics used in dermatology and cosmetology.
3. Oils used in the cosmetic industry.

4. Preservatives.
5. Moisturizing components.
6. Excipients used in the formulation of cosmetic preparations.
7. Factors affecting the process of bioavailability of cosmetic products when applied to the skin.
8. Biologically active, active and auxiliary substances of perfumery and cosmetic forms.
9. Prospective types of raw materials for cosmetics.
10. Methods of determining the perspective of using various substances in cosmetics.

### **III. Formation of professional skills and abilities:**

#### 3.1. Content of the task of practical work:

1. Classify the cosmetic preparations presented by the teacher, describe the meaning and expected effects.
2. Choose the following substances from the cosmetic composition presented by the teacher and describe their properties: the name of the cosmetic product  
enhancers  
preservatives  
antioxidants dyes  
vitamins and biological extracts products of mineral origin

Fill in the table: "Active and auxiliary substances in the composition of cosmetic products."

substances	representatives	the main meaning
Water		
Alcohols (polyhydric alcohols)		
Oils (of animal and vegetable origin)		
waxes		
Hydrocarbons		
High molecular compounds		
Silicones		
Surfactants		
Vitamins		
Biological extracts		
Dyes, mother-of-pearl		
Preservatives		
Antioxidants		
Fragrant substances		

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

**2.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

1. Analyze the following composition:



2. Describe the concepts: cosmetic care, cosmetic effect, cosmetic preparation, cosmetic form, cosmetic product. Answer the question

1. The difference in the meaning of the terms "cosmetology" and "cosmetics".
2. Directions of state regulation of the production of cosmetics and personal care products in Ukraine.
3. State sanitary and hygienic examination of cosmetic products.
4. Safety of cosmetic products.
5. Sanitary-hygienic and microbiological indicators, by which the quality of cosmetic products is evaluated.
6. Sources of microbial contamination of cosmetic products and ways to prevent it.
7. Consequences of microbial contamination of cosmetics, external signs of microbial contamination.
8. Criteria for assessing the safety of microbial contamination for various types of products, their justification.
9. Certification of cosmetic products in Ukraine, its features.
10. Documenting the results of sanitary and hygienic examination.
11. Normative documents according to which the production of cosmetic products is carried out.

#### **IV. Summing up**



## **List of recommended literature:**

### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
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### Practical lesson № 4

**Topic:** Means for cleaning the skin, features of the composition (4 hours).

**Purpose:** cosmetic lotions, definition, characteristics and classification of lotions; the cosmetic effect of lotions for hygienic and medical and preventive purposes; characteristics and functional purpose of the main components of the formulation of cosmetic lotions; characteristics of the nomenclature of biologically active substances in the composition of lotions for hygienic and therapeutic and preventive purposes; lotion preparation technology.

**Basic concepts:** enhancers, preservatives, antioxidants, dyes.

**Equipment:** cleansing creams, scrub creams, peeling creams, lotions.

**I. Organizational moment.**

**II. Control of reference knowledge**

**2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

**Requirements for theoretical knowledge:**

Cosmetic lotions are non-aqueous solutions of medicinal substances - mainly antiseptics, antifungal, antimicrobial substances. The combination of ethyl alcohol - purified water - glycerin is used as solvents (in 75% of prescriptions for dry skin care, in 45% of prescriptions for oily skin care). Castor oil is additionally introduced into the formulation of liquid preparations for hair care, both alone and in combination with ethyl alcohol and glycerin. 20% of cosmetic preparations in liquid form are suspensions, the dispersed phase of which are inorganic pigments (zinc oxide, talc, white clay, starch, etc.); dispersion medium – a combination of the following solvents: ethyl alcohol - glycerin - purified water. The technology of preparing cosmetic lotions using the above solvents includes the following technological stages:

- dissolution;
- filtering;
- packaging;
- registration before release.

The dissolution stage is based on the general technological principles of preparation of non-aqueous solutions using combined solvents:

- 1) dissolution of medicinal substances is carried out directly in a glass for release;
- 2) a medicinal substance is introduced into a dry bottle for release, and then a suitable solvent;
- 3) medicinal substances are dissolved in a suitable solvent;
- 4) volatile solvents (ethyl alcohol) are dosed by volume: non-volatile (glycerin, vegetable oils, mineral oils), as well as some volatile ones (medical ether, chloroform) by weight.
- 5) alcohol solutions are introduced into the aqueous solution of medicinal substances as their strength increases; finally, fragrant and volatile substances (cologne, perfume, cosmetic perfume) are introduced.
- 6) solutions with volatile solvents are not recommended to be heated, in exceptional cases they are heated to 40 °C.
- 7) filtration, or filtering, of the given solutions is carried out only if necessary. Filtration is carried out through a paper filter, a cotton swab or several layers of gauze.
- 8) Filtration of ethereal solutions is impractical. The technological process of preparing lotions consists of the following stages:

1. Preparation of raw materials.

2. Preparation of lotion:

- Introduction of alcohol-soluble substances;
- Introduction of water-soluble substances;
- Preparation of alcohol-water solution;
- Introduction of biologically active additives;
- Advocacy;
- Filtration.

3. Packaging, packaging, labeling of the finished product. Quality control of lotions Lotions are manufactured in accordance with the requirements of regulatory documentation,

according to technological instructions and recipes approved in the established order. Quality control of alcohol-containing lotions in accordance with the requirements of TU 64-19-64-90 "Cosmetic lotions". According to organoleptic and physicochemical indicators, lotions must meet the requirements.

### Quality indicators of lotions

Characteristic	Characteristic and norm
Appearance	Homogeneous transparent or slightly opalescent liquid. In lotions containing infusions of herbs and other biologically active substances, the presence of a slight sediment is allowed.
Color	Inherent in this name of the lotion
Scent	A pleasant, characteristic aroma for the lotion of this name
Mass fraction of ethyl alcohol, %	17,0-90,0
Hydrogen index, pH	1,2-8,5

Warranty period of storage of lotions - 12 months, tonics - 6 months from the moment of manufacture.

### **2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question

1. Anatomical and physiological features of the skin.
2. Cosmetic aspects of the skin. Characteristics and methods of determining skin types.
3. Characteristics of homogeneous dispersed systems.
4. Features of the effect of liquid cosmetics on the skin and its appendages.
5. Classification of cosmetics.
6. Classification, nomenclature and characteristics of biologically active and auxiliary substances used in the formulations of cosmetic lotions.
7. Factors affecting the process of bioavailability of cosmetics when applied to the skin.
8. Biologically active, active and auxiliary substances of perfumery and cosmetic forms.
9. Prospective types of raw materials for cosmetics.
10. Methods of determining the perspective of using various substances in cosmetics.
11. Cosmetic lotions. Definition, characteristics and classification of lotions.
12. Cosmetic effect of lotions for hygienic and medical and preventive purposes.
13. Characterization and functional purpose of the main components of the formulation of cosmetic lotions.

14. Characteristics, nomenclature of biologically active substances in the composition of lotions for hygienic and therapeutic and preventive purposes.
15. Definition of soap. Cosmetic effect. Classification of soaps, their general characteristics. Physico-chemical properties of soaps, quality requirements.
16. Characteristics of the main and auxiliary substances in the composition of soap.
17. Classification of fatty acids, natural fats and their synthetic analogues.
18. Characteristics of alkaline reagents, flavorings, dyes.
19. Characteristics of antiseptic and biologically active additives, emollients, hydrotropes, plasticizers.
20. Soap technology (direct and indirect soap making), evaluation of their quality. Liquid toilet soap based on natural surfactants. Glycerin bar soap. Technology. Quality control.
21. Characteristics of bath foams and their technology

### **III. Formation of professional skills and abilities:**

#### **3.1. Content of the task of practical work:**

1. Propose the composition and justify the functional purpose and quantitative content of the recipe ingredients:

- Hygienic lotion for oily skin;
- Lotion for oily skin for therapeutic and preventive purposes;
- Lotion for problem skin;
- Lotion for the treatment of acne;
- Tonic lotion for dry skin for hygienic purposes;
- Tonic lotion for dry skin for therapeutic and preventive purposes;
- Depigmenting lotion;
- Lotion after shaving.

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

**2.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

1. Describe the composition of the proposed cosmetic lotion.

### **IV. Summing up**

#### **List of recommended literature:**

##### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
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### **Additional literature**

1.Фармацевтична енциклопедія / Голова ред. ради та автор передмови В. П. Черних. – 3-тє вид., переробл. і доповн. – К.: «МОРІОН», 2016. – 1952 с.

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### **Practical lesson № 5**

**Topic:** Moisturizing cosmetic products, compositional features. Ways to moisturize the skin. Nomenclature of skin moisturizers (2 hours).

**Purpose:** cosmetic masks, scrubs: definition, classification, general characteristics, mechanism of action, nomenclature and characteristics of the components of the formulation of cosmetic masks depending on the purpose, nomenclature and characteristics of active and auxiliary substances used in the production of cosmetic scrubs, technology of cosmetic masks and scrubs, quality assessment cosmetic masks and scrubs.

**Basic concepts:** enhancers, preservatives, antioxidants, dyes.

**Equipment:** masks, cosmetic scrubs.

**Study time:**

**I. Organizational moment.**

**II. Control of reference knowledge**

**2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

**Requirements for theoretical knowledge:**

Currently, emulsion cosmetic creams are the most common in the cosmetic market, which is due to the high cosmetic efficiency and profitability of this group of cosmetic products. - the physiological justification for the use of emulsion as a basis for cosmetic products, based on the structural and functional features of the skin, the negative changes of which are prevented and corrected by emulsion cosmetic creams. Thus, dry, overly sensitive

skin characterized by the "mantle" type - m / in - requires a compensatory effect from water-oil systems, and oily skin type - in / m - in the application of systems with a predominant amount of water, i.e. m / in emulsions; - a rational combination of water and fats in the composition of emulsions, which provides a number of vital functions of both the skin and the body as a whole. The water-fat system, close in nature and composition to the natural components of the skin, is able to actively influence the processes occurring in the skin structures. The presence of water promotes wetting and hydration of the skin surface, which, in turn, increases its sorption properties. This is greatly facilitated by native "epidermal emulsifiers" - cholesterol and its esters. Contact with the environment improves, which promotes the activation of absorption and resorption processes. The high bioavailability of emulsions is also due to the ability of the hydrated skin surface to increase its "permeability". Activation of absorption is largely provided by surface-active substances (surfactants) - a mandatory component of emulsion systems - capable of degreasing the skin surface by solubilizing native lipids. Fats, in turn, being a carrier of natural nutrients, are able to functionally replace skin lipids when they are lacking. The properties of fats as a heater contribute to maceration and warming of the skin, which causes blood filling, and also increases the rate of absorption of substances;

- the possibility of introducing into emulsion systems substances with various physical and chemical properties capable of actively influencing biochemical processes in skin structures (amino acids, mineral salts, carbohydrates, fatty acids, vitamins, hormones, etc.), which allows to increase their bioavailability and directed affect certain violations of the structure and properties of the skin surface; the ability to vary the consistency and level of exposure, determined by the purpose of the cream, depending on the physical and chemical properties of the substances that make up the emulsion cream. Thus, emulsions are universal bases for creating cosmetic products of various forms and directions of action. Emulsion cosmetics, being multicomponent systems of active influence on the skin, have a rather large and diverse composition. In addition to water and fatty components, the mandatory presence of stabilizing additives - surfactants, thickeners, preservatives, antioxidants, etc., designed to ensure the existence of a stable system with given physicochemical properties. The group of substances that provide the necessary physicochemical parameters to the emulsion system is called "auxiliary substances". However, this definition in cosmetology is conditional, since a number of auxiliary substances are physiologically active, and often contribute to solving not only technological, but also cosmetic and pharmacological problems of the cosmetic product as a whole. Emulsion systems form the basis of most forms of cosmetic products - creams, lotions, aerosols (mousses), balms, decorative cosmetics, etc. The most numerous and, therefore, the most typical and indicative in all respects (physiological, technological) is the group of emulsion CS in the form of a cream. This is due to the fact that skin care products are traditional cosmetic products that can satisfy a number of consumer requirements, namely:



- freely squeezed out of the tubes or poured out of the bottle (extrusion);
- easy to apply, quickly absorbed by the skin;
- provide a targeted cosmetic effect on the skin;
- easy to remove if necessary from the surface of the skin.

Fulfillment of these requirements is ensured by the structural and mechanical parameters of cosmetic forms with an elastic-viscous dispersion medium. Emulsion creams are distinguished by consistency properties: liquid creams; actual creams; thick creams Both liquid and thick creams can be represented by emulsions of the 1st and 2nd kind, since the consistent properties of emulsions in / m and m / in are regulated with the help of auxiliary substances (emulsifying, thickening, etc.). As already mentioned, emulsions, depending on the type of emulsifier, nature and amount of dispersed phase, are classified into: type 1 emulsions of the oil/water type and type 2 emulsions of the water/oil type.

Characteristics of emulsions as dispersed systems. Principles of stabilization of emulsion cosmetic creams Coarsely dispersed heterogeneous systems consisting of liquids, one of which in a finely dispersed state (dispersed phase) is distributed in a continuous dispersion medium, are called emulsions. As a rule, one of the liquids is water, and the other is a water-insoluble liquid, conventionally called oil. Depending on which of the named liquids forms the dispersion medium, emulsions of the m/w (1st type) and w/m (2nd type) types are distinguished. There are also emulsions of the "multiple" type, in which the liquid, which is the dispersion medium, is dispersed in the droplets of the dispersed phase. Depending on the content of the dispersed phase in the system, dilute emulsions containing up to 0.1% of the dispersed phase are distinguished; concentrated emulsions containing up to 74% of the dispersed phase and highly concentrated emulsions with a dispersed phase content of more than 74%. Types of instability of emulsions: 1 - stable emulsion; 2 - flocculation (gluing); 3 - kinetic instability (delamination); 3a - sedimentation; 3b - cremation; 4 - coalescence (destruction); 5 - inversion (reversal) of phases.

Surfactants accumulate on the interphase surface and reduce the surface tension until the surface is completely covered with an adsorption layer of surfactants. The surfactant concentration, after which there is no further decrease in surface tension, is known as the critical micelle concentration (CMC). When this value is exceeded, an excess of surfactant forms micelles, which represent a new (colloidal) phase.

Micelles arise as a result of the adhesion of hydrocarbon chains by vander Waals forces, which form a non-polar core with a hydrophilic shell of polar groups. Micellar aggregates with a colloidal size of micelles from 40 to 500 are formed from a large number of molecules (up to 200) and form a gel-like structure in the adsorption layer. The high structural viscosity of such formations provides a structural-mechanical barrier that prevents the convergence of particles and the destruction of the emulsion system. Sedimentation instability of emulsions can be prevented both by reducing particles (with the help of technological operations) and by increasing the viscosity of the dispersion medium. Solving

the problem of physical stabilization of emulsions by increasing the viscosity of the dispersion medium is possible both with the help of surfactants (the formation of a structural-mechanical barrier in the volume of the dispersion medium) and, as mentioned above, with the help of thickening additives of various nature that mechanically prevent involuntary aggregation or deposition of dispersed phase particles.

## **2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question

1. Cosmetic creams. Definition, classification.
2. Factors affecting the process of bioavailability of cosmetics when applied to the skin.
3. Features of the cosmetic effect of preparations based on emulsions. Definition of emulsion creams, their classification, cosmetic effect.
4. Mechanism of stabilization of emulsions.
5. Characteristics and functional purpose of the main components of the formulation of cosmetic emulsions.
6. Principles of formulation of emulsion cosmetic creams.
7. Technology of preparation of emulsion creams. Quality control of creams.
8. Special purpose cosmetic creams.
9. Children's creams. Creams for correcting skin imperfections.
10. Fat creams. Definition, characteristics, technology.
11. Cosmetic petroleum jelly. Characteristics, technology.
12. Suspension creams. Definition, characteristic. Classification. Characteristics of suspension cream fillers. Technology of suspension creams on emulsion, fat and gel bases.
13. Gel creams, their classification and technology.
14. Cosmetic masks. Definition, characteristics, classification. The main components of the formulation of cosmetic masks (emollients, hydrotropes, dermatotropes, etc.).
15. Scrubs. Definition, characteristics, classification. Characteristics of the active substances of scrubs.
16. Photoprotective creams. Recipe. Nomenclature and mechanism of action of UV filters.
17. Depilatory creams. Recipe. Assessment of quality and consumer characteristics. Container, packaging and storage conditions.

## **III. Formation of professional skills and abilities:**

### **3.1. Content of the task of practical work:**

Content of the task of practical work: describe the quality indicators of cosmetic creams, describe the technology of emulsion cream production. Suggest the composition of the cosmetic scrub.

Task 1 Propose the composition and justify the functional purpose and quantitative content of ingredients in the formulation of cosmetic masks:

- For oily skin;
- For dry skin;
- For normal skin;
- Have a cleansing effect;
- Provide a moisturizing effect;
- Have a whitening effect;
- Have a tonic effect;
- Have an astringent effect;
- They have a tightening effect.

When developing the formulation of a cosmetic preparation, the following is taken into account:

- The degree of influence of the cosmetic preparation
- Purpose and cosmetic effect;
- The nature and quantity of the active component;
- Form of release of the drug.

Task 2 Propose the composition and justify the functional purpose and quantitative content of the ingredients of the scrub recipe:

- For oily skin;
- For dry skin;
- For normal skin.

When developing the formulation of a cosmetic preparation, the following is taken into account:

- The nature and quantity of the active component;
- Degree of dispersion of abrasive substances;
- Nature and amount of auxiliary substances;
- Form of release of the drug.

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

**2.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

1. Describe the composition of the proposed cosmetic lotion.

1. Give the classification of morphological elements of skin diseases, list the morphological elements, give them a brief description.

2. List the pathologies of the skin and its appendages:

A) diseases of sebaceous and sweat glands B) infectious bacterial dermatoses C) allergic skin diseases D) violation of skin pigmentation E) hair diseases.

3. Describe the composition of lotions depending on the direction of action.
4. Describe the technological process of making lotions.
5. List the main quality indicators of lotions and tonics.

#### **IV. Summing up**

#### **List of recommended literature:**

##### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
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5. Технологія виготовлення екстемпоральних лікарських апіпрепаратів і їх застосування в фармації, медицині та косметології : методичні рекомендації / О. І. Тихонов, Т. Г. Ярних, С. О. Тихонова, О. С., О. Г. Башура, О. С. Шпичак, Л. О. Бондаренко, П. С. Сирота, Б. Т. Кудрик, Р. І. Скрипник, Тихонов, Н. С. Богдан, С. Г. Бобро, Л. В. Каношевич, О. Є. Богуцька; за ред. О. І. Тихонова. – Х. : Изд-во НФаУ, 2016. – 75 с.
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1. [Department of pharmaceutical chemistry and drug technology of ONMedU](#) – website of the Department of pharmaceutical chemistry and drug technology of ONMedU
2. [Scientific library of ONMedU \(odmu.edu.ua\)](#) - Scientific library of ONMedU
3. [www.moz.gov.ua](#) – official website of the Ministry of Health of Ukraine
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### Practical lesson № 6

**Topic:** Cosmetic means of protective action, features of the composition. Photoprotective means (2 hours).

**Purpose:** Photoprotective means. Harmful factors of the external environment that affect the condition of the skin. Skin protection from wind, frost and other factors. Skin protection from UV radiation. The choice of photoprotective means depends on the sun factor.

**Basic concepts:** enhancers, preservatives, antioxidants, dyes.

**Equipment:** protective cosmetics.

**I. Organizational moment.**

**II. Control of reference knowledge**

**2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

### **Requirements for theoretical knowledge:**

Cosmetic preparations with a protective effect are cosmetic preparations aimed at preventing the impact of external irritating factors on the skin, such as UV radiation, chemical reagents, etc. The mechanism of their action is based on the creation of an appropriate mechanical and/or chemical protective barrier on the surface of the skin. Protective cosmetic preparations are divided into:

- water-repellent - protect the skin from the action of moisture, aggressive chemicals;
- photoprotective – protect against the effects of UV radiation;
- hydrating (moisturizing) - protect against dehydration;
- emollients - protect against degreasing;
- massage products - protect against physical impact, in particular during massage. The preventive and therapeutic effect of cosmetics is determined by the complex effect of biologically active and auxiliary substances. Photoprotectors are medicinal products that have the ability to reduce the sensitivity of the skin to solar radiation, to protect it from the harmful effects of this radiation, with resorptive or local action.

There are photoprotective agents for systemic and local use. The group of photoprotective agents for systemic use mainly includes drugs with a non-specific anti-inflammatory and desensitizing effect - hingamine, aminoquinol, hydroxychloroquine, resorcinol, indomethacin. The mechanism of the photoprotective action of vitamin B12 has not been clarified, although its effectiveness in this regard has been proven experimentally. Photoprotectors for local use mainly provide a photoblocking effect, preventing the contact of sunlight with the skin. This group of photoprotective agents includes paraaminobenzoic acid and its derivatives, titanium dioxide, and zinc oxide. Traditionally, photoprotective agents for local use also include phenyl salicylate, sodium salicylate, methyl salicylate, quinine, although their photoprotective effect is very limited. These photoprotective agents are included in pastes, creams, and aerosols produced by the industry. The most effective preparations with titanium dioxide and para-aminobenzoic acid. Easy-to-use domestic drug "Fenocortozole", containing phenylsalicylate and hydrocortisone as active substances. In the absence of ready-made products, you can use zinc ointment containing 3 g of zinc oxide and 27 g of petroleum jelly. Photoprotective preparations for local use are applied to open areas of the skin (primarily on the person) 30-40 minutes before leaving the room on a sunny day. Sweat and washing contribute to the removal of the photoprotector from the skin, therefore, in appropriate cases, the drugs should be applied repeatedly during the day (after 2-6 hours). The use of photoprotective agents does not invalidate the patient's compliance with the appropriate preventive regimen (exclusion of direct exposure to sunlight, use of a wide-brimmed hat, umbrella, tinted glasses).

**2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question:

Protective cosmetic preparations:

- water repellent
- photo protective
- hydrating (moisturizing)
- emollients

Give relevant examples of cosmetic products.

### III. Formation of professional skills and abilities:

3.1. Content of the task of practical work:

1. Protective cosmetic preparations: - water repellent - photo protective - hydrating (moisturizing) - emollients Give relevant examples of cosmetic products.
2. Compile the table "Cosmetic photoprotective preparations for the prevention of photoaging, photodermatoses and for safe tanning"

Manufacturing company, name of the drug	Biologically active substances	Notes

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

**3.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

**1. Fill in the table:**

photoaging		
photodermatosis		
photo protective cosmetics		

**2. Develop a presentation on the topic "Cosmetic photoprotective preparations for the prevention of photoaging, photodermatoses and for safe tanning."**

### IV. Summing up

**List of recommended literature:**

**Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
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5. State Register of Medicinal Products of Ukraine. - [Electronic resource]. - Access mode: <http://www.drlz.com.ua/> – as of 10.01.2017.

### **Practical lesson № 7**

**Topic:** Cosmetic products for oral hygiene, composition features (2 hours).

**Purpose:** peculiarities of the technology of oral cavity care products.

**Basic concepts:** oral hygiene products.

**Equipment:** protective cosmetics.

**I. Organizational moment.**

**II. Control of reference knowledge**

**2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

**Requirements for theoretical knowledge:**

The main means of oral hygiene should include: 1) toothpastes (powders); 2) dental gels; 3) dental elixirs; 4) chewing gum; 5) deodorants; 6) oral care tablets. Toothpastes have a multi-component composition. The main component is an abrasive filler. Most toothpastes use chemically precipitated chalk as an abrasive. Chalk toothpastes have a high cleaning and polishing effect, but at the same time they have a number of disadvantages, the main of which is an increased abrasive effect. In addition, the chalky dental components of the paste

are incompatible with many biologically active substances due to the alkaline environment. When fluorine is added to the composition of such pastes, the latter is quickly inactivated with the formation of a stable Ca complex. Pastes are also produced, in which silicic acid derivatives (aerosil, silica gel), phosphorous-calcium preparations (bipotassium phosphate, Ca pyrophosphate, kaolin) are used as abrasives.

In addition to the abrasive filler, toothpastes include gel-forming substances; preservatives; foaming agents; substances that improve taste qualities; perfumes, dyes; water and biologically active components. Toothpastes are conditionally divided into hygienic and therapeutic and preventive. Hygienic pastes are intended for cleaning and refreshing the oral cavity and do not contain pronounced therapeutic and preventive additives. These are pastes of the German company "SILCA PUTZI", Bulgarian production ("Good morning", "Good evening"), domestic production ("Dityacha", "Kharkivska"). Hygienic toothpastes can be foaming or non-foaming, but mainly differ from each other only in taste.

Therapeutic and preventive pastes. In addition to abrasive components, they include active additives that have therapeutic and preventive properties. Depending on the active components included in the formulation, these pastes are divided into subgroups: 1) anti-carries (containing fluorine, calcium, remodent, zinc citrate); 2) which contain plant impurities; 3) increased cleaning action; 4) saline; 5) contain biologically active substances; 6) antifungal.

Many toothpastes contain herbal additives, for example: "SILCA-HERB" - chamomile extract, mint, sage oil, "Flora-2" - St. John's wort extract, "Colgate Tonyheycil" - plantain extract. These pastes have a pronounced anti-inflammatory effect, eliminate bad breath, reduce gum bleeding, improve metabolism in the oral mucosa and stimulate regeneration processes. Salt pastes, which contain various salts and mineral components, as well as a set of microelements, fluorides, antiseptics, affect periodontal tissues, improve blood circulation, and activate metabolic processes in the soft tissues of the oral cavity. Salts prevent the formation of dental plaque.

Salt toothpastes include "EL-CE-Med SENSITIV" made in Germany, "PLATINUM" made in Great Britain, "POMORTN-ECO" made in Bulgaria, "PROMISE" made in India. The following toothpastes have an increased cleaning effect: "CKREST" manufactured by SINA, "DENIVIT" manufactured by Sweden, "ELKADENT-INTENSIV" manufactured by Germany, "DOCTOR ALEX" manufactured by Bulgaria. They contain active cleansing components: pancreatin, lysozyme, ribonuclease, nettle leaf infusion, etc. These pastes contribute to the removal of soft tissues of dental deposits, have a pronounced therapeutic and preventive effect on periodontal tissues. By cleaning the surface of the teeth, they provide better conditions for physiological processes during mineralization of enamel, having an anti-carries effect to some extent. Fluorine-containing pastes are quite widely used for local caries prevention. It has been proven that the use of such pastes for oral care reduces

the intensity of caries from 15 to 35%. The most effective anti-caries concentrations of fluoride are 1-2%. Fluorine is included in the composition of pastes in the form of sodium monofluoro-phosphate compounds, sodium fluoride, zirconium fluoride, amine fluoride, tin fluoride. Tooth powders consist of chemically precipitated chalk to which various aromatic additives are added: flavorings, menthol, oils. One of the disadvantages, as a result of which the popularity of tooth powders has recently decreased, is their high abrasiveness. The abrasive effect of tooth powders is 3 times higher than that of paste in relation to enamel, in relation to dentin - 4 times. Tooth powders do not contain bactericidal components and are therefore contaminated with microflora. In addition, they do not deodorize the oral cavity and are uncomfortable for constant use.

However, these disadvantages do not exclude the fact that many people with healthy periodontium, especially those with increased tartar deposition, can successfully use tooth powders. Therapeutic and preventive toothpastes Such tools have many functions. In addition to abrasives and flavorings, they have extracts, salts, vitamins, peroxides, and enzymes. Some are designed for daily dental care for hygiene and prevention. Others may be prescribed by a doctor for treatment of the oral cavity. The classification of toothpastes divides therapeutic and preventive pastes into several types:

1) Anticarious. They protect against the appearance of dental plaque, strengthen teeth. Many have fluoride. But the paste can be without it, then enzymes or calcium compounds are present.

2) Anti-inflammatory. They provide improvement of blood circulation, metabolism, elimination of bleeding and unpleasant odor. This group includes salt pastes, products with chlorophyll, antibacterial substances, plant extracts, and biologically active components.

3) Desensitizing. Designed for sensitive teeth. They may contain potassium and strontium salts that block tooth sensitivity. They do not contain strong abrasive substances, which leads to the rapid appearance of plaque.

4) Whiteners. The agents affect by destroying plaque or discoloration, removing pigment. Whitening pastes are recommended to be used more often 2 times a week, so sometimes they are classified as a separate type.

5) Sorptive. Include polymethylsiloxane polyhydrate and additional sorbents. Their main task is cleaning the oral cavity from microparticles and harmful bacteria.

6) Organic. These are natural pastes that include herbal extracts. Chalk serves as an abrasive. Dentists have different opinions about the use of these funds, since specialists are not always involved in the creation of products.

7) Children's. The composition of such products is chosen so that there is no harm to unformed enamel. They are not dangerous even if swallowed.

**2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question:

1. Classification and nomenclature of preparations for the care of the oral cavity. Requirements for their quality. Cosmetic effect.
2. Toothpastes. Definition, classification. Cosmetic effect. Factors affecting the stability of toothpastes.
3. Nomenclature and characteristics of abrasive substances and plasticizers, which are used in the production of preparations for the care of the oral cavity.
4. Characterization and functional purpose of surface-active substances and flavorings in the composition of toothpastes.
5. Characteristics of substances that have an anti-caries effect.
6. Biologically active additives, as part of preparations for the care of the oral cavity. Classification. Nomenclature. Mechanism of action.
7. Peculiarities of formulation of recipes of cosmetic preparations for the care of the oral cavity and teeth. Different directions of action. Peculiarities of making own formulations of toothpastes, dental elixirs with different directions of action.
8. Dental elixirs. Definition. Classification. Cosmetic effect. Characteristics of main and auxiliary substances in dental elixirs. Technology and quality assessment.
9. Tooth powders. Definition. Classification. Cosmetic effect. Characteristics of the main and auxiliary substances of tooth powders. Technology. Quality control.
10. Dental floss (floss), chewing gums, means for fixing prostheses.

### **III. Formation of professional skills and abilities:**

Offer a selection of ingredients for the formulation of the following cosmetic products for the care of the oral cavity and teeth: toothpaste with an anti-caries effect, periodontal paste, dental elixirs for acute gingivitis.

#### Task

- 1 Describe the composition of toothpaste. Give the composition of tooth powder to relieve inflammation of the gums. Describe the composition of deodorant and nail care products.
2. Familiarize yourself with oral hygiene methods, techniques for cleaning the oral cavity. Rational hygiene of the oral cavity with the use of dental floss and paste is an integral part of general human hygiene. Its effectiveness largely depends on the methods of cleaning teeth and gums. There is a wide variety of tooth brushing techniques. Some of them are given below.

*Standard method.* The tooth row is conditionally divided into several segments. Molars, premolars, front teeth on each side. Teeth are cleaned when the dental rows are not closed. The brush is placed at an angle of 45° to the surface of the tooth. They start brushing the teeth from the vestibular surface of the jaw on the left, performing 10 sweeping movements from top to bottom, then proceed to all other segments. After that, the palatal surface of the upper teeth is cleaned, moving along the segments from left to right, making 10 sweeping movements on each. On the lower jaw, the teeth are cleaned in the same sequence. When cleaning the palatal and lingual surface of the upper and lower jaw, the

brush is placed perpendicular to the tooth row. Cleaning ends with circular movements on the vestibular surface covering the teeth and gums and moving the brush from left to right.

*Brush rotation method.* The bristles of the brush are placed on the mucous membrane of the gums. The brush is pushed to the crown of the tooth with rotational movements. This movement is repeated 10-12 times in each segment of the tooth row.

*Leonardo's method.* The toothbrush is installed perpendicular to the vertical surface of the teeth, performing vertical movements in the direction from the gums to the crown of the tooth. The vestibular surfaces are cleaned when the rows are closed, the palatal surfaces are not closed, and the chewing surfaces are cleaned with backward movements. The method avoids damage to the gums.

*Reite's method.* The bristles of the brush are installed parallel to the axis of the tooth, their free ends should be adjacent to the gingival margin. When cleaning, make movements directed from the gums to the crown of the tooth.

*The Smith-Bell method.* The movements of the brush repeat the path of food during chewing. The brush is installed perpendicular to the chewing surface and in this position, with weak pressure and rotation, is advanced to the gums.

*Fones method.* When the tooth rows are closed, the bristles of the brush, located perpendicular to the vestibular surface of the teeth, perform circular movements. The lingual and chewing surfaces are cleaned with the same movements when the rows of teeth are not closed, alternately on the upper and lower jaws.

*Stillmon's method.* The toothbrush is installed so that the ends of the bristles lie partly on the gums, and partly on the cervical region of the tooth. Pressure is applied to the gingival margin until the gums are visibly anemic, performing a weak rotational movement with the brush. The movement is stopped with the appearance of bleeding in the gums. This is repeated several times. In order to clean the lingual surfaces of the front teeth of the lower and upper jaw, the brush is placed parallel to the axis of the tooth, and so that the tooth and the marginal part of the gums are between the bundles. Chewing surfaces are cleaned with bristles directed perpendicular to the occlusal plane.

Hygienic care of the oral cavity should not only consist of brushing the teeth with a toothbrush and toothpaste. At the same time, you should massage the gums and clean the interdental spaces with toothpicks and dental floss. In time, the entire complex of hygienic measures for the care of the oral cavity should last from 3 to 5 minutes. In the morning hours, it is better to brush your teeth immediately after breakfast, and before that limit yourself to rinsing your mouth with warm water. The ideal option is to brush your teeth after each meal.

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

### **3.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

1. List possible cosmetic products: A) for hair care B) for skin care C) for oral care D) cosmetic products for shaving.

2. Describe the main terms: lotions, tonics, emulsions, suspensions.

### **2. Develop a presentation on the topic "Cosmetic photoprotective preparations for the prevention of photoaging, photodermatoses and for safe tanning."**

## **IV. Summing up**

### **List of recommended literature:**

#### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.

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### Electronic information resources

1. [Department of pharmaceutical chemistry and drug technology of ONMedU](#) – website of the Department of pharmaceutical chemistry and drug technology of ONMedU
2. [Scientific library of ONMedU \(odmu.edu.ua\)](#) - Scientific library of ONMedU
3. [www.moz.gov.ua](#) – official website of the Ministry of Health of Ukraine
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5. State Register of Medicinal Products of Ukraine. - [Electronic resource]. - Access mode: <http://www.drlz.com.ua/> – as of 10.01.2017.

### Practical lesson № 8

**Topic:** Means for carrying out cosmetic procedures (4 hours).

**Purpose:** to get acquainted with the concepts of cosmetic masks, massage creams, skin depilation products, salon and household cosmetic procedures, their classification and characteristics, cosmetic masks, forms of mask production and features of their use, massage creams, skin depilation products.

**Basic concepts:** cosmetic masks, massage creams, skin depilation products.

**Equipment:** samples of cosmetics in the pharmacy assortment.

## **I. Organizational moment.**

## **II. Control of reference knowledge**

### **2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

#### **Requirements for theoretical knowledge:**

It is worth paying attention to inexpensive means that can be purchased at a pharmacy and used for cosmetic purposes. For hair. In order to ensure normal hair care, you can buy an inexpensive product at the pharmacy - Sulsen's paste. It is a preventive and curative agent against dandruff and at the same time nourishes the hair. If you buy lavender essential oil and add it to your hair conditioner, your hair will stay clean longer and will not get dirty. The use of the scalp stimulator "Repevit" is no less effective. It contains a lot of oils and herbal extracts, which together strengthen the hair and improve its growth. Despite the fact that the bottle is small, the result is worth it. A good hair mask is made from the following pharmaceutical preparations: Dimexide, vitamins in oil A and E. Take two teaspoons of these preparations, add lemon juice to them, rub into the scalp, and cover with a plastic bag. Keep the mask on the hair for an hour and you can wash it off. Be prepared to feel a slight burning sensation. Thanks to this mask, the hair on the head grows very quickly. Sea buckthorn oil is invaluable for hair care. If you need to treat excessive hair loss, the following mask is recommended: rub hot sea buckthorn oil with shampoo into the scalp before washing. After rubbing, you need to wrap your head with a film, and then a towel for an hour.

In order to accelerate hair growth, a teaspoon of Demixid is added to hot sea buckthorn oil. After rubbing into the scalp, you need to cover with a bag and then a towel. After such a mask, hair can grow by about 3-4 cm per month. Tincture of capsicum in tandem with castor oil 1/1 is also an excellent tool for strengthening hair. Rub into the scalp, massage well, wrap and leave for two hours. When washing off, you will need to apply shampoo three times to get rid of oiliness. This tool is especially useful during the spring and autumn periods. For the face. Apricot oil, which is enriched with vitamins and minerals, is very useful. Regenerates and nourishes the skin of the face. It softens, moisturizes well, and also normalizes the work of the sebaceous glands. To add freshness to the face, even



after a working day, it is effective to wipe with pieces of ice a decoction of: medicinal chamomile, sedum, olive oil and jojoba oil. In the summer, it is good to use ice cubes with a decoction of St. John's wort to wipe the face. It removes excessive dryness, gives the face the color of a light tan and has an anti-inflammatory effect. The drug Aevit will help with wrinkles on the face. From bags under the eyes Blefarogel No. 1 with hyaluronic acid. And heparin ointment will help with swelling. Calendula tincture on alcohol, diluted with water, can be used as a skin cleanser. For the purpose of peeling, you can use calcium chloride. The solution of this substance should be applied to a dry and clean face. After this layer dries, you need to apply the second one. And again you need to wait for drying. Then, you need to soap your palms well and start massaging the skin of your face, and roll the formed coils. Such peeling is both gentle and effective. For nails. For nails, it is useful to make sea salt baths. A bath made of warm burdock, peach, apricot oil will also have a good effect on the structure and appearance of the nails. It is important that the oil is warm. It is heated in a steam bath. For eyelashes. Castor and burdock oil, sold in bottles and capsules, can be used for eyelash and eyebrow masks. From stretch marks. A cream with the addition of two dissolved mumiyo tablets will tighten the skin on the body well. Before applying the cream, it is good to exfoliate with used brewed coffee. A good result in the fight against stretch marks has also been noticed when using the "Klirvin" cream.

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Group Names in accordance with group membership Basic vineyards; argan; almond; olive; ginger; sesame; linen; from wheat germ; coconut; burdock; pumpkin seeds; avocado; castor oil Essential grapefruit; birch; lavender; orange; rosemary; sage. For massage, it is important to choose the right heating agent of high quality. A mandatory condition is the absence of components that can provoke an allergic reaction of the skin. Other criteria: 1. Composition. Natural oils with pronounced anti-cellulite, hypoallergenic effect are needed. Connection with vitamin complexes, microelements is welcome. 2. A type of massage. For example, apricot, coconut, peach, almond, and grape oils are suitable for jar massage, which ensure easy gliding of the jar on the body, tighten the skin, and reduce fat masses. 3. Manufacturer. It is necessary to study customer reviews, additionally consult with a cosmetologist. The final result depends on the quality of such cosmetic products (the price also varies). 4. Texture and greasiness. The selected anti-cellulite composition should be well absorbed, not spread over the surface of the skin, and not leave stains on clothes. Fat level is important, it is necessary to test the products beforehand.

## **2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question:

1. Cosmetic masks.
2. Massage creams.
3. Means for skin depilation.
4. Salon and household cosmetic procedures, their classification and characteristics.
5. Cosmetic masks, forms of mask production and features of their use.
6. Massage creams.
7. Methods of fighting cellulite.
8. Metabolism of adipose tissue.
9. Stages of cellulite formation.
10. Preparations for internal and external therapy.
11. Anti-cellulite means.

### **III. Formation of professional skills and abilities:**

Solve the task: Give a scheme of daily cosmetic skin care depending on the type. Solve the task: Using the International Classification of Cosmetic Ingredients, on the example of samples of cosmetic products, justify the functional purpose of each of the components: massage cream, skin depilation agent, anti-cellulite agent.

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

**3.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

1. Principles of ingredient selection depending on the type of skin and the purpose of the cosmetic product.
2. Ingredients of cosmetic products, their classification and characteristics.
3. Natural and synthetic ingredients in cosmetics.
4. Biologically active substances of plant origin as active components of cosmetics.
5. Cosmetic, technological and biopharmaceutical evaluation of individual groups of ingredients.

### **IV. Summing up**

#### **List of recommended literature:**

##### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
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1. [Department of pharmaceutical chemistry and drug technology of ONMedU](#) – website of the Department of pharmaceutical chemistry and drug technology of ONMedU
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3. [www.moz.gov.ua](#) – official website of the Ministry of Health of Ukraine
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### **Practical lesson № 9**

**Topic:** Cosmetic products for hair care (4 hours).

**Purpose:** to form theoretical knowledge of the nomenclature, cosmetic effect, classification and mechanism of action of shampoos, shampoo-conditioners, shampoos against dandruff with different directions of action; acquire practical skills and abilities regarding the rational choice of the formulation of this group of drugs for different types of skin and hair, optimal technology and quality assessment.

**Basic concepts:** shampoo, shampoo-conditioner.

**Equipment:** samples of cosmetics in the pharmacy assortment.

#### **I. Organizational moment.**

#### **II. Control of reference knowledge**

##### **2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

##### **Requirements for theoretical knowledge:**

Among detergents for cosmetic and hygienic purposes, shampoos represent a large and diverse product category. Over the past 10-15 years, shampoos have undergone significant evolution both in terms of quality and functionality. Great attention is paid to dermatological softness, aesthetic design, cosmetic aspects, all this expanded the set of conditioning and biologically active components. Shampoo (according to DSTU 2472-94 "Perfume-cosmetic products. Terms and definitions") is a cosmetic product for hair and

scalp cleaning and care. According to the consistency, shampoos are produced in the form of liquid, gel, cream or powder. In terms of composition, shampoos can be based on synthetic surface-active substances, on a fatty or mixed basis. The cosmetic effect of hygienic shampoos consists in: cleaning, degreasing the surface of the hair and scalp; therapeutic and preventive shampoos provide an effect against dandruff, prevent hair loss, have a regenerating effect due to the introduction of the BAR complex, special additives; decorative shampoos provide a short-term effect.

#### Classification of shampoos

##### By composition:

- Based on synthetic surfactants;
- Based on actual soaps;
- Based on a mixture of soap and surfactant.

##### According to the form of release:

- Liquids;
- Creamy;
- gel-like;
- Powdery;
- Aerosol.

##### By appointment:

- Hygienic;
- Therapeutic and preventive (special);
- Decorative.

Liquid shampoos are aqueous solutions of active detergents - surfactants (surfactants) from 10 to 30%). Currently, cream and gel-like shampoos, which have higher consumer characteristics: cosmetic effectiveness, ease of use and dosage, are more common forms of release. The basis of most powder shampoos are pigments, as a result of adsorption, the hair is partially degreased. Long-term use of such shampoos is not recommended, as they often cause dandruff. Some powdered shampoos contain surfactants and require the preparation of an aqueous solution immediately before use. An important factor in the development of the formulation of foaming agents is the use of synergistic effects, that is, the improvement of the characteristics of surfactants in combination with other ingredients of the formulation, since it is impossible to achieve simultaneously acceptable consumer and dermatological properties of shampoos when using only one surfactant. Excessive degreasing and dermatological harshness of surfactants can lead to significant changes in the water-lipid balance of the skin and provoke the further development of negative processes. Therefore, the dermatological properties of cosmetics that are in contact with the surface of the hair and scalp for a long time are very important.

Of particular importance are the colloidal and chemical characteristics that determine the consumer properties of the funds:

- Viscosity;
- Foaming properties;
- Sensory assessment.

The shampoo must maintain the minimum permissible viscosity at a temperature of 40 °C and not undergo delamination after exposure to low temperatures. To prevent sedimentation (precipitation) of finely dispersed additives during storage of finished products, it is necessary to ensure the maximum stability of viscosity in a wide temperature range. The clouding temperature of shampoos should be, as a rule, no higher than 5 °C. The introduction of some surfactants can significantly lower the cloud point of the product.

The main characteristics of the foaming properties of surfactants are:

- Foam volume;
- Foam stability;
- Foam density.

The optimal parameters are foam stability of 80-90% within 20-30 minutes and foam density of 7-10 g/l.

Anionic surfactants are often used as the main surfactants in hair care products. They should combine high foaming properties, the ability to electrolyte thickening and satisfactory dermatological properties. The main task in creating shampoo formulations is to reduce the irritating effect of anionic surfactants. Alkyl sulfates of sodium and ammonium remain active surfactants in shampoos.

An example of a shampoo base for normal hair can be the following composition (%):

Sodium lauryl sulfate 10.0

Lauryl sulfate Thea 5.0

Laurylcarboxybetaine 3.0

Diethanolamides of aliphatic acids

Coconut oil 4.0

The water is purified to 100.0

## **2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question:

1. Definition of shampoos. Cosmetic effect.
2. Classification of shampoos. Requirements for the quality of shampoos.
3. Characterization of the main and auxiliary substances in the composition of shampoos. Classification of surfactants, their positive properties and disadvantages.
4. Mechanism of action of surfactants. Characteristics of anionic surfactants.
5. Characteristics of cationic, anionic and nonionic surfactants.
6. Characteristics of thickeners, antistatic agents, preservatives, antioxidants, pH regulators, degreasers, hydrotropes, aromas, dyes.
7. Characterization of biologically active substances, antiseborrheic agents in shampoos.

8. Technology of shampoos and evaluation of their quality.
9. Cosmetic products for intensive hair care.
10. Cosmetic hair care products. Characteristics of balms and rinses.
11. Nomenclature and properties of cationic polymers, silicone liquids.

### III. Formation of professional skills and abilities:

An important factor in the development of the formulation of foaming agents is the use of synergistic effects, that is, the improvement of the characteristics of surfactants in combination with other ingredients of the formulation, since it is impossible to achieve simultaneously acceptable consumer and dermatological properties of shampoos when using only one surfactant. The presence of a well-balanced base, which provides a washing effect, high foaming and optimal dermatological properties, makes it much easier to develop a formulation taking into account the type and condition of the hair. Maintenance of the natural water-lipid balance is possible only in the presence of a soft detergent base of the composition. Excessive degreasing and dermatological harshness of surfactants can lead to significant changes in the water-lipid balance of the skin and provoke the further development of negative processes. Therefore, the dermatological properties of cosmetics that are in contact with the surface of the hair and the scalp for a long time are very important. Of particular importance are the colloidal and chemical characteristics that determine the consumer properties of foaming agents:

- foaming properties;
- viscosity;
- sensory assessment.

In view of the above:

1. Propose and justify the basis of shampoo for normal hair.
2. Test shampoo samples suggested by the teacher, enter the results of your own observations into the table. Draw conclusions.

№	Indicators	Sample 1	Sample 2	Sample 3
1	Appearance			
2	Color			
3	Scent			
4	pH			
5	Foaming ability			
6	Mass parts of lorides, %			

Analyze the composition of the proposed shampoo. Draw conclusions.

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.



**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

**3.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

1. Hair as an appendage of the skin. Hair structure. Functions.
2. Methods of determining the condition, type and physical properties of hair.
3. Classification and nomenclature of surfactants used in foam cleansing cosmetics.
4. Classification, characteristics and nomenclature of auxiliary, biologically active and active substances used in the production of hair care products.
5. Basic technological approaches to the preparation of emulsion, gel and liquid dispersion systems.
6. Shampoos. Definition. Classification. Cosmetic effect.
7. Classification and nomenclature of surfactants used in the production of shampoos.
8. Cosmetic effect when using cosmetic products with a foam washing effect for hair.
9. Characteristics of the nomenclature and recommended concentrations of anionic, cationic, amphoteric and nonionic surfactants in the composition of foaming cosmetic preparations for hair.
10. The mechanism of cleansing action of foam cleansing cosmetics.
11. Positive and negative effects when using surfactants.
12. Function, characteristics, nomenclature of thickeners, antistatic agents, preservatives and bactericides in shampoos.
13. Factors influencing the effectiveness of preservatives.

#### **IV. Summing up**

##### **List of recommended literature:**

###### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
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###### **Additional literature**

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14. Маркетинг у фармації та парфумерно-косметичній галузі: навчально-методичний посібник для самостійної роботи студентів фармацевтичного факультету спеціальності «Технології парфумерно-косметичних засобів», / Н.О. Ткаченко., В.О. Демченко, Н.М. Червоненко, Т.П. Зарічна. - Запоріжжя: ЗДМУ, 2016. - 100 с.

### **Electronic information resources**

1. [Department of pharmaceutical chemistry and drug technology of ONMedU](#) – website of the Department of pharmaceutical chemistry and drug technology of ONMedU
2. [Scientific library of ONMedU \(odmu.edu.ua\)](#) - Scientific library of ONMedU
3. [www.moz.gov.ua](#) – official website of the Ministry of Health of Ukraine

4. [Odessa National Medical University \(onmedu.edu.ua\)](http://onmedu.edu.ua) – ONMedU official website
5. State Register of Medicinal Products of Ukraine. - [Electronic resource]. - Access mode: <http://www.drlz.com.ua/> – as of 10.01.2017.

### **Practical lesson № 10**

**Topic:** Cosmetic products for children, features of the composition Forms of release of cosmetic products for children. Features of the composition and research of cosmetic products for children under 3 years of age (4 hours).

**Purpose:** to characterize the properties of the structure of the skin of children's body, the form of release of cosmetic products for children, to know the peculiarities of the composition and research of cosmetic products for children under 3 years of age.

**Basic concepts:** cosmetics for children.

**Equipment:** samples of cosmetics in the pharmacy assortment.

#### **I. Organizational moment.**

#### **II. Control of reference knowledge**

##### **2.1. Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units)**

##### **Requirements for theoretical knowledge:**

In recent years, great importance has been attached to the care of children's skin, as well as to the restoration of impaired skin function in patients suffering from atopic dermatitis. Modern pediatricians use not only "baby creams" of various names of domestic or foreign production, which are made on lanolin-vaseline or glycerine-vaseline bases. External means of a new generation, made on the basis of cosmetic products with the addition of biologically active additives capable of providing a therapeutic effect, appeared on the market. Cosmeceuticals, "pharmacy cosmetics" or medical and cosmetic products entered the practice of many presenters, and then also ordinary specialists, in accordance with world standards of skin restoration and care. These drugs achieve their effect due to a truly physiological effect, since their composition can include fruit acids, tocopherol acetate, which is an antioxidant, natural reducers of the hydrolipid layer of the skin - hyaluronic acid, ceramides, polyunsaturated fatty acids, as well as sunscreen and photoactive compounds. At this time, high-quality medical and cosmetic products are used in pediatric practice to solve a number of dermatological problems, which have certain advantages over other, traditionally cosmetic products used in our country: - they allow you to carry out step-by-step systematic care for different types of skin; - satisfy the aesthetic requirements of every age category of children and teenagers, as they have a pleasant smell (or have no smell); - do not stain skin and clothes; - contain special components that mask skin defects; - improve

the quality of life of children suffering from such skin diseases as atopic dermatitis, diaper rash and seborrheic dermatitis, acne.

A child's skin has certain functional features that determine their increased sensitivity to external stimuli and a tendency to disrupt the integrity of the epidermal barrier. Here are some of them: - gradual increase of physiological dryness of the skin against the background of "hormonal pause"; - imperfection of the hydrolipidic membrane; - rapid destruction of the hydrolipidic layer under the action of excreta (urine, feces, saliva); - thin epidermis (fewer rows of cells in the layers of the epidermis and a smaller size of the cells themselves); - weakness of intercellular connections, as a result of which the stratum corneum is loose; - close to the neutral pH of the skin - equal to 6.7; - low production of melanin by melanocytes in children. It is very important that the use of high-quality medical cosmetics can prevent skin damage even in very sensitive children and helps in the treatment of already developed dermatitis. Therefore, the goal of treatment already in the first months and years of children's life in modern conditions is to reduce irritating effects while actively maintaining the integrity of the epidermal barrier. Systematic care of the child's skin, including careful cleaning, moisturizing and protection, with the use of medical cosmetics, allows you to prevent skin damage and stop the manifestations of dermatitis at the very beginning of the process. It is especially necessary to emphasize the need to moisturize children's skin. The degree of hydration of the skin is extremely important. If the water content of the stratum corneum, which is normally 10-20%, drops below 10%, the stratum corneum becomes brittle and potential irritants such as soap and powder can more easily penetrate the skin. Therefore, in children before the onset of puberty, the use of moisturizing creams and hydrating emulsions is relevant, especially after water procedures.

The effect of moisturizing agents is based on slowing down the dehydration process and restoring the hydrolipidic membrane. This effect is achieved by including various oils, ceramides, and polyunsaturated fatty acids in these preparations, prepared, as a rule, on the basis of thermal water. Moisturizing cosmetics are widely used in children with the initial manifestations of atopic dermatitis and beyond its exacerbation, effective for excessive dryness, lichenification, peeling. Medicinal cosmetics have a preventive effect, as they correct skin dryness, lower the threshold of skin hyperreactivity, protect the skin from adverse external influences, have an anti-inflammatory effect, thus reducing the frequency of application of local corticosteroid drugs, as a result, the frequency of exacerbations decreases and the quality of life of patients improves. Moisturizers and emollients used to care for the skin of children with atopic dermatitis should not contain stabilizers, fragrances, alcohol and other lipid-dissolving components. In addition, moisturizing and emollient skin care products for patients with allergic dermatitis (atopic, contact) should not contain mineral oils, petroleum jelly, or lanolin. In order to soften the skin, cosmetics based on so-called physiological lipid mixtures should be used. Ceramides, free fatty acids and cholesterol in such products should be in a certain ratio. At the same time, water is included in the composition of many cosmetic products, that is, when using a combined product for

removal with the help of only one product, the skin is moisturized and its lipid composition is restored.

For example, such items of the Aven (Pierre Fabre) skin care line as Trixera cream and Trixera therapeutic bath soften the skin, restoring its lipid structure, intensively moisturize and have an antipruritic effect. This product does not contain flavorings and irritating preservatives. Constant use of combined - moisturizing and rejuvenating lipid composition of the skin means is an essential component in accelerating the onset of remission of dermatitis and preventing its manifestations.

**2.2. Questions (test tasks, tasks, clinical situations) to check basic knowledge on the subject of the lesson:**

Answer the question:

1. Peculiarities of the structure of the skin of a child's body.
2. Forms of release of cosmetic products for children.
3. Features of the composition of cosmetic products for children up to 3 years old
4. Study of cosmetic products for children up to 3 years old.

**III. Formation of professional skills and abilities:**

1. Assess the quality of the cosmetic in accordance with the requirements of regulatory documents and indicate the method of application.

Powder for the treatment of skin ulcers

Essential oil of wormwood 0.2

Rosemary essential oil 0.2

Dermatol 5.0 Zinc oxide 10.0

Talc 10.0 2.

Justify the composition, functional purpose of the ingredients of toothpastes, powders and liquid products

Aluminum hydroxide 40.0

Glycerin 10.0

Sorbitol 10.0

Sodium carboxymethyl cellulose 1.6

Sodium lauryl sulfate 1.8

Calcium glycerophosphate 1.5

Sodium monofluorophosphate 1.0

Titanium dioxide 1.0 Saccharin 0.05

Flavoring 1.0

Purified water Up to 100.0

**3.2. requirements for work results, including to registration;** According to the progress of the practical lesson, complete the individual task in your workbook.

**3.3. requirements for work results, including registration;** According to the recommendations (instructions) for the tasks.

### **3.4. control materials for the final stage of the lesson: problems, assignments, tests, etc.:**

1. Analyze the composition of several varieties of cosmetics based on samples of cosmetic products of domestic and foreign manufacturers.
2. Analyze the composition of several types of cosmetics for children based on samples of cosmetic products of domestic and foreign manufacturers.

### **IV. Summing up**

#### **List of recommended literature:**

##### **Main:**

1. Технологія косметичних засобів : підручник для студ. вищ. навч. закладів / О. Г. Башура, О. І. Тихонов, В. В. Россіхін [та ін.] ; за ред. О. Г. Башури і О. І. Тихонова. — Х. : НФаУ ; Оригінал, 2017. — 552 с.
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### **Electronic information resources**

1. [Department of pharmaceutical chemistry and drug technology of ONMedU](#) – website of the Department of pharmaceutical chemistry and drug technology of ONMedU
2. [Scientific library of ONMedU \(odmu.edu.ua\)](#) - Scientific library of ONMedU
3. [www.moz.gov.ua](#) – official website of the Ministry of Health of Ukraine
4. [Odessa National Medical University \(onmedu.edu.ua\)](#) – ONMedU official website
5. State Register of Medicinal Products of Ukraine. - [Electronic resource]. - Access mode: <http://www.drlz.com.ua/> – as of 10.01.2017.