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PHARMACEUTICAL TERMINOLOGY: FROM LATIN TRADITION TO MODERN NOMENCLATURE TRENDS

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ФАРМАЦЕВТИЧНА ТЕРМІНОЛОГІЯ МІЖ ЛАТИНСЬКОЮ ТРАДИЦІЄЮ ТА СУЧАСНИМИ ТЕНДЕНЦІЯМИ НОМЕНКЛАТУРИ

Abstract. The article presents a comprehensive study of the formation of terminological competence in future pharmacy specialists in the process of learning the Latin language, which serves as a fundamental basis for mastering the international pharmaceutical terminology system. The key principles, pedagogical approaches, and methodological tools aimed at developing students' terminological awareness are analyzed, including the integration of practical Latin classes with professionally oriented courses. It is emphasized that the acquisition of pharmaceutical terminology is grounded in a thorough understanding of the phonetic, orthographic, morphological, and syntactic norms of Latin grammar, which ensures the formation of skills necessary to correctly interpret the structure of terms, their word-formation models, and semantic content. The main objectives of the Latin language course in medical higher education institutions are identified, including the development of skills in analyzing and reproducing international pharmaceutical vocabulary, as well as the ability to work with regulatory documentation, international pharmacopoeial standards, and medicinal product instructions. The article highlights that pharmaceutical terminology is an essential component of both the educational process and the professional activity of pharmacists, as the accuracy of terminology directly affects the quality of medical communication, pharmacotherapeutic decision-making, and patient safety. The necessity of unifying specialized pharmaceutical terminology in accordance with the requirements of the European Pharmacopoeia is substantiated, as such harmonization is a prerequisite for aligning national standards with international ones. It is noted that the main challenges in standardizing pharmaceutical terminology are related to polysemy, synonymy, and the influence of the English language on chemical nomenclature, which lacks a case system and is characterized by an analytical mode of word formation. Particular attention is drawn to discrepancies in the spelling of term elements and medicinal product names caused by the absence of unified transliteration rules and standardized approaches to foreign borrowings. To enhance and harmonize the pharmaceutical terminology system, the article proposes developing a universally accepted national standard for the formation, spelling, and practical use of conventional names of medicinal products, which will ensure consistency of the terminological space and improve the effectiveness of professional training for future pharmacists.

Key words: terminological competence; pharmacist; pharmaceutical terminology and nomenclature.

Анотація. У статті представлено комплексне дослідження проблеми формування термінологічної компетентності майбутніх фахівців фармації у процесі вивчення латинської мови, яка є фундаментальною основою для засвоєння міжнародної фармацевтичної терміносистеми. Проаналізовано ключові принципи, педагогічні підходи й методичні інструменти, спрямовані на розвиток термінологічної обізнаності студентів, зокрема інтеграцію практичних занять із латинської мови та фахових дисциплін. Наголошено, що опанування фармацевтичної термінології базується на глибокому засвоєнні фонетичних, орфографічних, морфологічних та синтаксичних норм латинської граматики, що забезпечує формування вмінь коректно інтерпретувати структуру термінів, їх словотвірне моделювання та семантичне наповнення. Визначено провідні завдання курсу латинської мови у медичному закладі вищої освіти, серед яких –

розвиток навичок аналізу та відтворення інтернаціональної фармацевтичної лексики, уміння працювати з нормативною документацією, міжнародними фармакопейними стандартами та інструкціями до лікарських засобів. Підкреслено, що фармацевтична термінологія є важливим компонентом як освітнього процесу, так і професійної діяльності фармацевтів, оскільки точність терміновживання безпосередньо впливає на якість медичної комунікації, фармакотерапевтичних рішень та безпеку пацієнтів. Обґрунтовано необхідність уніфікації спеціальної фармацевтичної термінології відповідно до вимог Європейської Фармакопеї, що є передумовою гармонізації національних стандартів із міжнародними. Визначено, що труднощі нормування фармацевтичної термінології значною мірою пов'язані з полісемією, синонімією та впливом англійської мови на хімічну номенклатуру, у якій відсутня відмінкова система та превалює аналітичний спосіб словотворення. Окремо наголошено на проблемі розбіжностей у написанні терміноелементів і назв лікарських препаратів, спричиненій відсутністю уніфікованих правил транслітерації та стандартизації іншомовних запозичень. Із метою удосконалення та гармонізації фармацевтичної терміносистеми запропоновано розробити загальноприйнятий національний стандарт формування, написання та практичного використання умовних назв лікарських засобів, що забезпечить єдність термінологічного простору та підвищить ефективність професійної підготовки майбутніх фармацевтів.

Ключові слова: термінологічна компетентність; провізор; фармацевтична термінологія і номенклатура.

Introduction. The professional activity of a pharmacist involves constant interpersonal communication; therefore, the training of a highly qualified pharmacy specialist is impossible without the formation of communicative and terminological competence. The priority goal of education is to develop the ability of future professionals not only to perform professional duties but also to acquire professional and communicative skills that contribute to the expansion of their professional competencies.

According to V. Pohribna (Pohribna, 2008), professional communicative competence implies a high level of professional knowledge, mastery of the conceptual and categorical framework of a specific professional field and its corresponding system of terms, as well as a general humanistic culture, the ability to navigate the surrounding world, and the skills of effective communication. Defining the role of terminology in the formation of professional communicative competence among specialists in any field of knowledge is an important issue in modern professional education.

The purpose of the article is to reveal the main principles of forming terminological competence in future pharmacists and to outline the key ways of unifying pharmaceutical terminology and harmonizing it with the terminology of the European Pharmacopoeia.

Theoretical Part. Pharmacology belongs to the modern sciences that are rapidly developing and possess a complex, structured system of scientific names, through which all stages of terminology system formation can be traced. It has evolved and improved over many centuries, and has reflected the level of scientific and practical activity at each stage of social development in the pharmaceutical field. Therefore, it is entirely justified to state that pharmaceutical terminology not only serves as a conceptual and terminological means of information transmission but also constitutes a legal foundation for decision-making and the organization of executive actions. The incorrect use of terms may negatively affect the quality of pharmaceutical care, that's why each term must concisely yet accurately reflect the semantic content of the concept related to technological processes, products, or other aspects of pharmaceutical science and drug manufacturing.

According to H. Rakshanova (Rakshanova, 2010, p. 126), terminology is a fundamental structural element in the improvement and standardization of the language of a specific field, while a term is a word or phrase that denotes a clearly defined specialized concept within a particular area of science, technology, art, or social life, and is used in the process of understanding and mastering scientific and professional objects and the relationships between them. Pharmaceutical terminology is the result of the development and interaction of theoretical and practical pharmacy, as well as numerous specialized disciplines that study the research, production, and application of medicinal products. It consists of terminological subsystems from various fields of knowledge: pharmacological nomenclature, which includes the names of drug groups, nomenclature designations of individual medicinal products, and standard prescription expressions; international Latin botanical nomenclature together with Pharmacognostic terminology; Pharmaceutical Chemistry terminology; technological terminology, covering the names of dosage forms and galenic preparations, manufacturing and pharmacy processes and operations; and medical and biological terminology.

Like the specialized terminology of any other scientific field, pharmaceutical terminology is a living structure that is continuously updated. Since Pharmacology is characterized by the intensive expansion and transformation of pharmaceutical technologies and production, driven by the dynamic development of science, the pharmaceutical terminological system requires constant study and systematization. An important role in this process is also played by Ukraine's acquisition of the status of an active member of the European Pharmacopoeia Commission, which actualizes the adaptation of national regulatory documents to the requirements of the WHO and the harmonization of specialized pharmaceutical terminology with the terminology of the European Pharmacopoeia.

Emphasizing the need for the unification of pharmaceutical terminology, the author of the study (Pert-

sev, 2021, p. 36) rightly noted that, from a historical perspective, pharmaceutical terminology was created without any systematic, let alone scientific, approach, which inevitably affected the quality and consistency of concepts in Pharmacology. Many terms were borrowed from earlier-established classifications or from other fields of Chemistry, food science, and Medicine (e.g., chemical and pharmaceutical industry, sulfonamide drugs, vitamin preparations, herbal preparations, etc.) or mechanically carried over from ancient times (e.g., galenic preparations).

Modern pharmaceutical terminology consists of several subsystems: names of dosage forms (tabuletta – tablet, unguentum – ointment); names of medicinal plants (Chelidonium – celandine; Chamomilla – chamomile); auxiliary corrective substances (oleum Olivārum – olive oil); names of animal-derived raw materials (adeps suillus – pork fat); names of alkaloids and glycosides (Ephedrinum – ephedrine, Euphyllinum – eufyllin); scientific and trivial names of medicinal products (Antipyrinum – antipyrine, Tetracyclinum – tetracycline); Latin chemical nomenclature (Ferrum – iron, Argenti oxydum – silver oxide, Natrii hydrocarbonas – sodium bicarbonate); as well as classification names of drugs according to their therapeutic action (sedativa – sedatives, antipyretica – antipyretics) (Lekhnitsʹka, 2013, p. 445).

A thorough study and scientific analysis of term formation methods, particularly in the nomenclature of medicinal products, as well as the compilation of frequency dictionaries of Greek-Latin term elements and the development of recommendations for term creation based on them, have theoretical, practical, and methodological significance in teaching the fundamentals of pharmaceutical terminology in higher education institutions. It should be noted that throughout the entire history of pharmaceutical terminology, lexical units and word-formation elements have traditionally been used from Greek and Latin langauges in term formation. Therefore, in the process of teaching Latin, students are presented with a strictly professional task: to actively master pharmaceutical terminology based on phonetics, orthography, morphology, and elements of Latin syntax.

The study of the course is conducted over two semesters in the first and second years and involves the following objectives:

– to form in students a comprehensive understanding of the lexical, grammatical, and communicative features of Latin, studied in the context of the specific specialization of students;

– to develop professionally oriented communicative competence in students based on knowledge of pharmaceutical terminology, with a view to its further application in professional practice;

– to lay the foundations for practical skills in the use of professional Latin terminology in educational, scientific, and practical activities, and to create prerequisites for the conscious acquisition of Greek and Latin term elements incorporated into the specialized sublanguage of pharmacists.

Due to the bilingual nature of pharmaceutical terminology, its names contain word-forming elements (roots, suffixes, and prefixes) derived from both Latin and Greek. Knowledge of the most frequently used Greek roots, suffixes, and prefixes facilitates better comprehension and memorization of pharmaceutical names and helps determine the therapeutic function of a given drug. It should be noted that in drug nomenclature, the majority of Greek term elements are transliterated into Latin following the conventions of the literary language. The names of medicinal products are formed while preserving specific features of the Greek language, such as the use of the letter «y», digraphs ph, ch, rh, th, and diphthongs ae, oe. For example: Phytobronchol (phyt- – plant, bronch- – bronchus); Anaesthesinum (aesthes- – sensation, sensitivity).

However, due to the absence of unified transliteration rules, there is an increasing tendency toward simplified spelling of certain term elements in the names of medicinal products (e.g., -fen- vs. -phen-; -aeth- vs. -et- or -eth-; -meth- vs. -met-; -thi- vs. -ti-, etc.). For instance: Tiopanal, Miconazolum, Ftorocort. In domestic reference sources, many drug names can be found where frequent morphemic segments have the same meaning but differ in orthographic form. For example, in the names of certain preparations containing the pharmaceutical segment aeth- (indicating the presence of an ethyl or ethinyl radical), the diphthong is often omitted, resulting in two variants of the same word-forming element – Aethaperazinum and Etamsylatum.

In view of the above, when explaining the topic «General Information on the Nomenclature of Medicinal Products», the instructor should draw students' attention to issues related to the Latinization of term elements of Greek origin. The differences in transliteration of the same term elements within the national terminological system can be explained by the influence of international nomenclature. Clearly, such inconsistency diminishes the informative function of word-forming elements, since each conventional name of a medicinal product is a combination of specific formative components with well-defined meanings. Therefore, differences in transliteration represent a significant obstacle to the unification and standardization of the national nomenclature of medicinal products.

In the process of developing students' terminological competence, it is important to pay special attention to the grammatical material necessary for forming the ability to construct pharmaceutical terms. Since nouns and adjectives constitute the basis of pharmaceutical terminology and botanical nomenclature, efforts

should be directed toward mastering these particular parts of speech. It is also crucial to carefully explain to students the rules for constructing terms with coordinated and nonagreeded attributes when studying the topic «Chemical Nomenclature».

As is known, chemical nomenclature is a system of names for chemical elements and their compounds, which represent medicinal substances. In 1994, a new Ukrainian chemical nomenclature was adopted in Ukraine, developed by the Ukrainian National Commission on Chemical Terminology and Nomenclature. It was based on native Ukrainian nomenclatural traditions and took into account the latest achievements in international terminology, particularly the recommendations of the International Union of Pure and Applied Chemistry (IUPAC).

According to international chemical nomenclature, Latin names of oxides, peroxides, and bases are syntactically nonagreeded attributes and consist of two nouns – the name of the cation (chemical element) in the genitive singular and the name of the anion in the nominative singular. The names of anions are expressed by neuter nouns of the second declension, such as oxydum, i n – oxide; peroxydum, i n – peroxide; hydroxydum, i n – hydroxide; for instance: Zincum oxydum – zinc oxide.

The Latin names of salts are also formed according to the principle of an nonagreeded attribute. The name of the cation (chemical element) in the Genitive singular comes first, followed by the name of the anion – for example: Natrii bromidum – sodium bromide. However, according to the State Standard of Ukraine, the names of oxides and salts are formed by combining two nouns in the Nominative case – magnesii oxyde, natrii bromide. Names of oxides constructed in this way are regarded as fixed word combinations, in which only the second word is declined; that is, the name of the chemical element serves as an nonagreeded attribute to the group name of the oxide. Such a structure of oxide and salt names, which is completely unacceptable from the standpoint of Ukrainian grammar, is due to the influence of the English language on Ukrainian chemical nomenclature, since English lacks a case system.

In a prescription, the Latin name of a chemical element or compound is written, rather than its symbol or chemical formula. A new feature concerning the names of chemical elements is the distinction between the actual name of the element and the name of the simple substance. The systematic names of chemical elements correspond to their symbols and to the names of their compounds (Au – Aurum, Ag – Argentum, etc.), while the Ukrainian names of the simple substances remain unchanged (silver, gold, etc.) (Svitlychna, 2004). The instructor should also draw students' attention to this information and, for clarity, demonstrate a table of the names of chemical elements.

In Latin language classes, the instructor is sometimes compelled to explain terms whose grammatical structure does not conform at all to the norms of Latin grammar. For example, when teaching the topic «Nomenclature of Dosage Forms», it is necessary to draw students' attention to the officially registered names of dosage forms in the State Pharmacopoeia of Ukraine, such as capsules, suppositories, ad usum peroralia. The presence of such terms has become a characteristic feature of the national pharmaceutical terminology system. Since these terms are included in the Pharmacopoeia, this issue can neither be ignored nor easily explained.

Similar issues arise when explaining the names of imported medicinal forms that end with -e, a suffix uncharacteristic of Latin but typical of French grammar – for example, Ethoforme, Talidine, Essentiale. The number of such drugs on the domestic market continues to grow. Since there are no established rules in Latin prescriptions regarding their use, a question arises as to how they should be written in nomenclature names and prescriptions – whether they should be declined according to the model of second-declension Latin nouns or treated as indeclinable nouns (e.g., dragee).

Researchers studying the functioning of pharmaceutical terminology (Svitlychna, 2012) see the solution to this problem in developing a generally accepted national standard for the formation and use of conventional names of medicinal products. According to the researcher, these conventional names should follow uniform rules of formation, pronunciation, spelling, and usage. This is particularly important because all such names must be standardized in prescription writing.

The standardization of the pharmaceutical terminological system sometimes becomes practically impossible due to a negative phenomenon in terminology – synonymy. The emergence of synonymous names is caused by both linguistic and extralinguistic factors, including the continuous development of sciences accompanied by the appearance of new concepts and the desire to name them as precisely as possible; the lack of unification in certain terminological systems; the coexistence of outdated and newly introduced terms; and the parallel use of borrowed and native terms.

The use of synonyms is sometimes not a matter of personal choice – for instance, in the use of adjectives as specific epithets in the botanical names of plants. There exists a certain order in the use of such adjectives, established by tradition. Thus, the meaning of the adjective «marshy, swampy» can be expressed by two dictionary forms: paluster, tris, tre (Ledum palustre – wild rosemary) and uliginosus, a, um (Gnaphalium uliginosum – marsh cudweed). The adjectives communis, e and vulgaris, e, both meaning «common», are also traditionally associated with

certain nouns, as recorded in botanical nomenclature. For example, the adjective communis, e is used in plant names such as Amygdalus communis (common almond), Juniperus communis (common juniper), Ricinus communis (castor bean), and others. Meanwhile, vulgaris, e with the same meaning occurs in names such as Thymus vulgaris (common thyme), Armeniaca vulgaris (common apricot), Tanacetum vulgare (common tansy), and others.

A distinctive feature of synonymy in the section «Pharmaceutical Terminology» is the quantitative predominance of adjective synonyms over noun synonyms. Among pharmaceutical synonymous terms, there are also nomina whose use depends on lexical combinations. For instance, the adjective aquosus, a, um («aqueous») is used in combination with the nouns tinctura (tincture), solutio (solution), and extractum (extract), whereas the adjective hydricus, a, um, which has identical semantics, combines with other words. The concept «purified» occurs within three semantic fields. The past participle depuratus, a, um agrees only with the noun sulfur: Sulfur depuratum – purified sulfur. The participle rectificatus, a, um, with the same meaning, can be used with spiritus (alcohol) and oleum Terebinthinae (turpentine): Spiritus rectificatus – rectified alcohol; Oleum Terebinthinae rectificatum – rectified turpentine. The third synonym, purificatus, a, um, is used with serum (serum), vaccinum (vaccine), anatoxinum (anatoxin), and aqua (water): Serum purificatum – purified serum; Vaccinum purificatum – purified vaccine; Anatoxinum purificatum – purified anatoxin; Aqua purificata – purified water.

Conclusions and Prospects for Further Research. The conducted study allows us to conclude that pharmaceutical terminology is one of the key factors both in the educational process and in practical pharmacy. It plays a significant role in analyzing the state of the pharmaceutical market, planning the volume of drug production, determining the optimal levels of their consumption, identifying shortcomings, and developing standards in medicine and pharmacy. Timely response to the transformational processes taking place within the pharmaceutical terminological system, the abandonment of outdated terms, the introduction of new ones into educational courses, as well as the identification and correction of errors found in professional publications, will contribute to raising the overall level of linguistic and professional competence of future specialists. Given the importance of forming the terminological competence of future pharmacists, further research prospects lie in studying the influence of the English language on contemporary Latin medical and pharmaceutical terminology.

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