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THE PROBLEM OF TRANSLATION AND INTERPRETATION OF THE PHARMACEUTICAL TERMS

Abstract. *The article explores the intricate system of pharmaceutical terminology in English and Ukrainian, acknowledging the evolving nature of scientific language due to rapid advancements. The comprehensive examination of pharmacy branches and laws reveals the multifaceted challenges in translation, necessitating precision for patient safety and industry integrity. The research identifies potential translation errors stemming from medical term misunderstandings, lack of standardization, synonymy, and internationalization. Contextual nuances and the importance of transliteration and translation borrowing in preserving specificity underscore the need for meticulous translation practices. The article concludes by emphasizing the pivotal role of accurate pharmaceutical translation in ensuring research, development, and regulatory compliance, thereby upholding industry standards and patient well-being.*

Keywords: *pharmaceutical terminology, translation challenges, industry standards, equivalence in translation, context.*

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ПРОБЛЕМА ПЕРЕКЛАДУ ТА ТЛУМАЧЕННЯ ФАРМАЦЕВТИЧНИХ ТЕРМІНІВ

Анотація. *Стаття досліджує специфіку англomовної фармацевтичної термінології з точки зору її еквівалентності в українській мові у контексті стрімкого розвитку наукової мови. Комплексний аналіз фармацевтичних галузей і законів розкриває багатогранні проблеми перекладу, що вимагає точності для безпеки пацієнтів і цілісності галузі. Дослідження визначає потенційні помилки перекладу, що виникають через неправильне розуміння медичних термінів, можливість синонімії термінів, відсутність стандартизації та інтернаціоналізації. Контекстуальні нюанси та важливість транслітерації та перекладу запозичень підкреслюють необхідність ретельного перекладу. Наголошується на ключовій ролі точного перекладу фармацевтичної термінології в забезпеченні відповідності нормативним вимогам, галузевим стандартам і благополуччя пацієнтів.*

Ключові слова: *фармацевтична термінологія, труднощі перекладу, галузеві стандарти, еквівалентність у перекладі, контекст.*

Introduction. Term has a unique value within a certain terminology, which is associated with a particular area of scientific knowledge. Due to the accelerated development of science and technology, there is a massive creation of new terms. Each country has its own rate of development of the pharmaceutical sector, but the introduction of modern medical terminology includes about 100,000 words and stable phrases that make up the terminological base. As we know the terminology system in this area corresponds to the level of modern development of the pharmaceutical industry. However, the terminology is variable and can use different sources when forming. For example, most basic pharmaceutical terms were derived from Greek and Latin. However, there are terms of Arabic, Italian, German, English and French origin. Later, they could be created by borrowing terms from other scientific fields, such as chemistry, biology, and medicine.

There are generally five core branches of pharmacy with own terminology. The field of pharmacy can generally be divided into three main disciplines: 1) *pharmaceutics* that concerns on how to convert medication and drugs to suitable drug dosage forms; 2) *pharmaceutical sciences* including pharmaceutical and medicinal chemistry, pharmacognosy, pharmacy technology, pharmacy management and economics and pharmacology; 3) *pharmacy practice* that concerns dispensing medication correctly: in the late 20th century, this field has developed into hospital pharmacy and clinical pharmacy. All of these fields are concentrated on optimizing patient care [1]. The correctness of translation and interpretation of pharmaceutical terms of each of these branches is of extreme importance as minimal changes in context may mislead and cause harm to health in the future.

Pharmacy laws generally include the regulations for the practice of pharmacy, the sale of poisons, the dispensing of narcotics, and the labeling and sale of dangerous drugs. The pharmacists sell and dispense drugs within the provisions of the food and drug laws of the country in which they practice. These laws recognize the national pharmacopoeia, which defines products used in medicine, their purity, dosages, and other pertinent data as the standard for drugs. The World Health Organization of the United Nations began publishing the *Pharmacopoeia Internationalis* in the early 1950s. Its purpose was to standardize drugs internationally and to supply standards, strengths, and nomenclature for those countries that had no national pharmacopoeia.

In Ukraine, the issue of translating pharmaceutical terminology into Ukrainian is regulated by relevant legislation. Ukraine is the only one among the countries of the former USSR to have its own national Pharmacopoeia – The State Pharmacopoeia of Ukraine (SPH), which was put into effect in 2001. Leading specialists of higher schools, academic and industry institutes, regulatory bodies, pharmaceutical enterprises, and the pharmaceutical public participates in the development, review, and revision of pharmaceutical sphere. And among the topics discussed there is a problem of finding adequate equivalents of pharmaceutical terms for global medical community.

Analysis of recent research and publications. This analysis shows how the problems of translation and interpretation of medical terminology were tackled by studying different translation theories, such as Munday [11] who refers to Koller's theory about equivalence and Vinay & Darbelnet's model of direct translation and oblique translation as well as Ingo (2007), who accounts for text sort conventions [15]. The study of internationally standardized anatomical nomenclature and the rapid development of non-standardized terminology in certain fields is among the research interests of scientists [7] as well as the problem of establishing equivalents for specialized terms [9]. The problems of translation interpretations of pharmaceutical terminology, the peculiarities of the translation of this terminology, the difficulties of translating pharmaceutical terms and the search for English-Ukrainian equivalents are highlighted in the research of Ukrainian scientists [2; 14].

The laws aim to ensure the accuracy and clarity of the terminology used in the pharmaceutical sector, facilitating understanding and compliance with industry norms. The primary tool in this process is the legislative alignment of translations for key terms and drug names. This not only fosters better communication among pharmaceutical professionals but also ensures clarity and accessibility of information for end consumers. The regulation of pharmaceutical terminology translation underscores the importance of standardization and adherence to high professional standards in this crucial healthcare sector.

Objective of the article is the pharmaceutical terminology of the English and Ukrainian languages, and the subject is the challenges that may arise when translating, interpreting and unifying terms. The tasks of this paper are the following: identify the causes of translation errors

during the translation of pharmaceutical terminology; analyze existing categories of pharmaceutical terms; determine the most frequent ways of translating pharmaceutical terms.

Research results. Translation of pharmaceutical terms is a critical and precise process because inaccuracies in translation can have serious consequences for both patients and pharmaceutical industry professionals. Mistakes in translating medical and pharmaceutical terminology can lead to medication errors, miscommunication among healthcare providers, and, ultimately, compromise patient safety. These errors in the translation of pharmaceutical terminology can arise from various factors. Some possible of them are: 1) misunderstanding of medical terms – translators who do not understand relevant medical terms may translate them incorrectly; 2) lack of standardized terminology – in some cases terms may have different meanings in different countries, leading to confusion; 3) synonymy – one concept may have several synonyms, while another language uses only one term, so this can lead to uncertainty in translation; 4) unification or internationalization – some terms may be international and used without a literal translation, which can make it difficult to understand the terms.

Within the pharmaceutical sector, precise translation is vital for research and development, regulatory compliance, and quality control, as any misunderstanding or misinterpretation of terms can result in production errors, regulatory violations, or compromised product quality. Therefore, ensuring accurate translations in the pharmaceutical field is of paramount importance to maintain the integrity and safety of the industry.

To solve this difficulty, you can literally reproduce the structures and components of words in the desired language. The following examples present this translation technique:

Pharmacokinetics (фармакокінетика) – the study of the route medications take in the body, the way they are absorbed, transformed, distributed, metabolized, and eliminated;

bioavailability (біодоступність) – the rate that a drug is made available to the target site of physiological activity;

bioequivalence (біоеквівалентність) – the phenomenon when a drug has the same biological effect, efficacy or bioavailability as a similar drug with a different formulation;

psychotropic (психотрон) – drugs that have a psychological effect, they alter a patient's mind, mood or behavior;

pharmacognosy (фармакогнозія) – the study that deals with the nature and sources of natural drugs obtained from plants or animals, either directly or indirectly;

pharmacology (фармакологія) – the science and study of drugs, including the chemistry and biological effects;

isotonic (ізотонічний) – relating to a solution having the same tonicity (saline) as human blood;

diuretic (діуретик) – drug that increases the body's urine discharge flow and decreases overall fluid accumulation;

transdermal (трансдермальний) – administering a drug through the skin, usually with a patch or ointment;

intravenous (інтравенозний) – existing or taking place within, or administered into, a vein or veins.

The use of the term with another Latin or English name that is generally accepted in the country or medical community is often employed to facilitate better communication and understanding among healthcare professionals and patients. These are the names of well-known medicines, dosage forms, types of drugs and tablets, active pharmaceutical substances, and official medicinal plants:

sublingual (Eng.) / *sub linguam* (Lat.) / *сублінгвальний* (Ukr.) – placed under tongue, often used for placing a tablet under a patient's tongue to dissolve;

rectal (Eng.) / *rectalis, per rectum* (Lat.) / *ректальний* (Ukr.) –relating to, affecting, or located near the rectum;

ophthalmic (Eng.) / *ophthalmicus* (Lat.) / *офтальмологічний, очний* (Ukr.) –for treatment of, around or in the patient’s eye;

antidote (Eng.) / *antidotum* (Lat.) / *антидот, протиотрута* (Ukr.) –a substance that stops the harmful effects of a poison;

adhesive (Eng.) / *adhaesivus* (Lat.) / *адгезивний* (Ukr.) – designed to stick to something;

Acorus calamus or sweet flag (Eng.) / *Acorus calamus* (Lat.) / *лепеха звичайна, айр болотний* (Ukr.) –the sweet flowering with various pharmacological activities of *Acorus calamus* rhizome such as sedative, CNS depressant, anticonvulsant, antispasmodic, cardiovascular, hypolipidemic, immunosuppressive, anti-inflammatory, cryoprotective, antioxidant, antidiarrheal, antimicrobial, anticancer and antidiabetic;

oregano (Eng.) / *origanum vulgare* (Lat.) / *материнка звичайна* (Ukr.) – oregano oil and oregano extracts can relieve symptoms of anxiety and depression in rodents and humans;

tincture (Eng.) / *tinctura* (Lat.) / *настоянка* (Ukr.) – a drug dissolved in an alcohol solution to make an oral preparation.

Medical terms can often exhibit dual significance, encompassing both pharmaceutical specificity and a broader, non-pharmacological connotation. While these terms may initially emerge from the realm of pharmacology, they frequently extend their reach into general discourse, acquiring meanings that transcend the boundaries of drug-related contexts. This duality underscores the dynamic nature of medical language, as it seamlessly navigates between specialized jargon within the pharmaceutical domain and a more inclusive vernacular that resonates with a wider audience. In this way, medical terminology not only serves the precise needs of healthcare professionals but also becomes an integral part of everyday communication, reflecting the intersection of specialized knowledge and broader linguistic usage. The following examples demonstrate how pharmaceutical terms, rooted in specific drug-related contexts, have found their way into everyday language with broader meanings beyond the pharmaceutical realm. The first example under 1) presents the pharmaceutical specificity of the word while the second one under 2) demonstrates broader connotation of it.

Dose/dosage – 1) the specific amount and frequency of a drug prescribed for medical treatment (*The recommended **dosage of this medication** is 100 mg by mouth three times a day.* – *Рекомендована **доза цього препарату** становить 100 мг перорально тричі на день*);

2) the amount or intensity of any substance, such as the dosage of exercise or a dosage of advice (*The title of the book is «The influence of **dosage of exercise** on functional performance in athletes breathing».* – *Назва книги «Вплив дозування фізичних навантажень на функціональні показники дихання у спортсменів»*).

Side effect – 1) describes unintended, often undesirable, effects of a drug (*The new medication has a potential **side effect**, which may include drowsiness or nausea.* – *Новий препарат має потенційний **побічний ефект**, який може включати сонливість або нудоту*); 2) indicates any unintended outcome or consequence, not necessarily related to medication (*Painting the room a vibrant color had an unexpected **side effect** – it instantly lifted my mood every time I walked in.* – *Фарбування кімнати в яскраві кольори мало несподіваний **побічний ефект** – це миттєво піднімало мій настрій кожного разу, коли я заходив*).

Compound – 1) a substance formed by the combination of two or more elements in a fixed ratio, often used in drug formulation (*The pharmacist explained that the **compound prescribed by the doctor** is a combination of two active ingredients to enhance its effectiveness.* – *Фармацевт пояснив, що **препарат, призначений лікарем**, являє собою комбінацію двох діючих речовин для посилення його ефективності*); 2) a mixture or combination of

various elements, not limited to pharmaceutical contexts (*A cascade of waterfalls in the central part of the territory is a necessary element for residential compounds and hotels in tourist areas.* – *Каскад водоспадів в центральній частині території є необхідним елементом для житлових масивів і готелів в туристичних зонах.*)

Placebo – 1) a substance with no therapeutic effect, often used in clinical trials to assess the efficacy of a drug (*In the clinical trial, some participants received the actual medication, while others were given a placebo to assess the true effectiveness of the drug.* – *Під час клінічного випробування деякі учасники отримували справжні ліки, а іншим давали плацебо, щоб оцінити справжню ефективність препарату*); 2) anything that may have a perceived effect but lacks a true, substantial impact (*His encouragement acted as a placebo, boosting her confidence even though the situation remained unchanged.* – *Його підбадьорення діяло як плацебо, підвищуючи її впевненість, хоча ситуація залишалася незмінною*).

Prescription – 1) a piece of paper on which a doctor writes the details of the medicine or drugs that someone needs (*The doctor wrote a prescription for antibiotics to treat the infection.* – *Лікар виписав рецепт на антибіотики для лікування інфекції*); 2) the [act](#) of [telling](#) someone [else](#) what they must have or do, such as a recommendation, order, prescription, or composition (*Traditional prescriptions for growth in Africa are not working very well.* – *Традиційні настанови щодо розвитку в Африці працюють не дуже добре*).

The importance of context in the translation of pharmaceutical terms cannot be overstated. Pharmaceutical terminology is highly specialized, and the meaning of a term can vary depending on the specific context in which it is used. Without a clear understanding of the surrounding information, such as the type of drug, its intended use, or the patient population, translating pharmaceutical terms accurately is challenging. A seemingly straightforward term may have different translations based on the clinical setting, regulatory requirements, or the stage of drug development. Therefore, taking into account the context in which these terms are used is essential to ensure precise and meaningful translations, ultimately contributing to the safety and efficacy of pharmaceutical products and healthcare practices.

Transliteration and translation borrowing are two distinct forms of translational transformation employed in the translation of pharmaceutical terms. Transliteration involves representing the characters of one writing system in another, focusing on preserving the pronunciation rather than the semantic meaning. This proves invaluable when dealing with languages that utilize different scripts, ensuring accurate rendering of drug names, chemical compounds, and medical jargon. On the other hand, translation borrowing entails incorporating foreign terms directly into the target language, often to maintain specificity or due to the absence of an equivalent term. In pharmaceutical translation, this can occur when a certain drug or medical concept lacks a precise counterpart in the target language. While transliteration aids in maintaining phonetic accuracy, translation borrowing strives to retain the specialized meaning of pharmaceutical terms, providing a comprehensive approach to conveying both the sounds and significance of these terms across linguistic boundaries. The judicious combination of these translational strategies contributes to the precision and clarity required in the translation of pharmaceutical terminology. Translation borrowing and transliteration are often used to preserve the internationality of pharmaceutical texts.

Translational borrowings are words or phrases borrowed from another language without changing their pronunciation and spelling. In pharmaceuticals, translational borrowings are used to denote such concepts as:

1) names of chemicals – *acetylsalicylic acid* (*ацетилсаліцилова кислота*), *aspirin* (*аспірін*), *penicillin* (*пеніцилін*), *amphetamine* (*амфетамін*), *scopolamine* (*скополамін*), *nitrocholine* (*нітроксолін*);

2) names of medicines – *analgin* (*анальгін*), *paracetamol* (*парацетамол*);

3) names of vitamins – *thiamine* (тіамін), *ascorbic acid* (аскорбіновакислота), *ascorutin* (аскорутин); *ibuprofen* (ібупрофен);

4) names of medical procedures – *surgery* – хірургія, *anesthesia* – анестезія, *vaccination* – вакцинація.

Transliteration is the transfer of words or phrases from one script to another by reproducing their letters using the corresponding letters of another script. In pharmaceuticals, transliteration is used to indicate such concepts as:

1) names of medical terms – *diagnosis* (діагноз), *epidemic*(епідемія), *relapse* (рецидив);

2) names of medical devices – *thermometer* (термометр), *tonometer* (тонометр), *stethoscope* (стетоскоп), *pulse oximeter* (пульсоксиметр).

Also, when it comes to industrial equipment for the production of medicines, translation borrowings and transliteration are used. For example: *aseptic zone* – асептична зона, *filtrate* – фільтрат, *dryer* – сушарка, *filter press* – фільтр-прес, *tablet press* – таблетпрес, *ampoule* – ампула, *extrusion* – екструзія, *extraction* – екстракція, *sterilization* – стерилізація, *granulation* – грануляція, *granulate* – гранулят, *tube* – туба, *sachet* – саше, *blister* – блистер, *automated system* – автоматизована система, *control system* – контрольна система, *measuring equipment* – вимірювальне обладнання, *vacuum system* – вакуумна система.

Translation of pharmaceutical terms is done in different ways. The most common method of translation is the search for dictionary equivalents of the term in the target language. When translating pharmaceutical texts, linguists have the opportunity to use special dictionaries as needed since they are uniform for most countries. Some of them are:

1) The Pharmaceutical Glossary, which has a compilation and explanation of pharmaceutical terms and definitions;

2) Medical dictionary, which contains a collection and explanation of medical terms and definitions;

3) Pharmacological terminology, which contains terms used in pharmacology and used in all or almost all cases of their appearance in the source text.

Conclusion. The translation of pharmaceutical terms requires a delicate balance between language competence and in-depth knowledge of pharmacy. The dynamic nature of this field, marked by continuous scientific development and global regulatory standards, underscores the critical need for precision in translation. Translators must navigate diverse terminology and understand the dual significance of pharmaceutical terms, which seamlessly transition between specialized jargon and everyday language. The importance of context cannot be overstated, and errors in translation may have serious consequences for patient safety and industry integrity. The strategic use of transliteration and translation borrowing further contributes to the clarity and accuracy needed in pharmaceutical translation. Ultimately, the success of this translation lies in the collaboration between linguistic expertise and pharmaceutical insight, ensuring effective communication and maintaining the integrity of the pharmaceutical industry.

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