Using Brand Names of Drugs in Medical Latin Teaching Materials for Pharmacy Students

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https://doi.org/10.29081/CP.2025.30.03

Abstract

The present article focuses on the methodological problems encountered during the process of teaching Latin for pharmaceutical purposes at medical universities in Bulgaria, and, in particular, on the usage of drug brand names during the practical classes in Latin by the students from the specialties Pharmacists (with a master's degree of educational level) and Pharmacy assistants (with a bachelor's degree).

In building their professional competence, future pharmacists have to become familiar not only with the features of Latin language grammar but also to enrich their vocabulary with official terms from all the subsystems in Latin medical terminology. These items include anatomical and clinical lexicological units and phrases as well as terms naming chemical elements and substances, parts of plants, products of primary processing of the medical plants, drug forms, labels of groups of medicines with similar effects, and brand names of drugs. Any gap in that knowledge may cause serious problems connected with the health status of patients/medical drug users.

The main aim of the current investigation is to illustrate, in general, the content of the terminological corpus mentioned above and the essential rules existing within it. Lexical excerption and analysis are used as main methodological tools to achieve it.

The research topic is chosen on purpose because the information about drug brand names, their regulation, structural patterns, and etymological background is missing or situated at the periphery of the specialized literature and Latin textbooks for pharmaceutical students.

Keywords: *Latin for pharmaceutical purposes, drug brand name, medical terminology, pharmaceutical terminology, specialized Latin methodology*

1. Introduction

This didactic topic aims to examine the possibilities for enriching the teaching content in Latin for pharmacy purposes. Generally, students of pharmacy in Bulgarian medical universities have to acquire a large Latin material from different disciplines. The students are of two specialties: Pharmacists (a master's degree educational level) and Pharmacy assistants (a bachelor's degree). The first one is organised at the medical universities and the second mainly at medical colleges. They have very similar curriculum on the subject "Latin and pharmaceutical terminology". The scope of their studies on the language covers grammatical material like: conjugation of verbs, declensions of nouns and adjectives, comparatives and superlatives, numerals and composing prescriptions. Along with this grammatical content, they have to study the vocabulary from different fields like Anatomy, Chemistry, Biology and Botany, Greek, combining forms for constructing clinical compound terms and, of course, the pharmaceutical terminology itself. It is considered that the students of Pharmacy have more complicated syllabus compared to medical and dentistry ones, because the pharmacology field including a lot of the medical fields, which are professional areas of variable medical specialties. The program is structured for one academic year and it covers 60 hours (2 academic hours per week for two semesters with duration of 15 weeks each).

This article aims at providing examples for practical exercises for students of Pharmacy that cover topics related to their professional education. It also tries to suggest some possible training methods that might be involved in the classroom. The motivation of learners is greatly dependent on their achievement all through the year. They need to register their advance in learning by doing tasks with different level of difficulty. Analyzing the learning objectives for them, we can outline some essential goals they have to obtain during their Latin training for memorizing grammar and vocabulary of 1st, 2nd, 3rd, 4th, and 5th declension nouns and adjectives; peculiarities about usage of verbs of 1st, 2nd, 3rd and 4th conjugation (present tense, active and passive voice, indicative, imperative and conjunctive moods), as well as Latin adjectives in positive, comparative and superlative degree, chemical and botanical nomenclature, drug forms and medication groups, Greek and Latin combining forms as parts of compound clinical terms, and last but not least, writing and reading prescriptions.

Nevertheless, their sphere is strictly the knowledge of pharmaceutics, as students should have basic knowledge of anatomical and clinical vocabulary as a part of drug forms and chemical substances, while the mentioned above grammatical categories of the verbs are mainly in use for constructing specific expressions used in prescriptions.

This course of Latin destined to pharmacists and pharmacy assistants has the objectives to prepare future specialists, by instruction and training, to become familiar with professional language and vocabulary. To use in practice specific terms and concepts corresponding to their level of professional competence, teaching methods are various. Starting from more conservative language practices like declining nouns and idioms, conjugating verbs and translating sentences, which are all necessary to acquire technical skills for dealing with Latin constructions, the course also covers more advanced teaching materials influenced by contemporary didactic strategies. That is the reason why paying an attention to the drug brand names as part of that essential vocabulary is of great importance.

2. Criteria

The initial criterion for gaining skills in Latin for specific pharmaceutical purposes is the free operation with terms and concepts, translation from and to Latin, independent reading and understanding sentences related to professional disciplines and showing good orientation in expressions for drug administration, states and conditions of the body. This requires the knowledge over the whole syllabus constructed for first year students. It consists of quite a lot of chemical elements and substances, parts of plants, products of primary processing of the medical plants, drug forms, and labels of groups of medicines with similar effects.

1. Examples of study content

Along with the basic and indispensably needed grammatical material, students are also taught numerous principles to construct pharmaceutical expressions. This necessity concerns not specific professional terminology but it is also part of the knowledge for the drugs and their ingredients, active substances, inhibitors and additives. This allows them to start creating a primary vocabulary, important for future special disciplines from their curriculum within the academic studies. Some examples can be provided here:

a) Expressions containing parts of plants used in processing (*noun+noun* – phrase structure):

Vlerianae tinctura (Tincture of valerian)
Crataegi fructus (Fruit of hawthorn)
Rosae folium (Leaf of rose)
Chamomillae herba (Chamomile stalk)

We see the model set by the European Pharmacopeia (Pharmacopeia Europeana) for inscription of pharmaceutical drugs – first is the name of the plant in the case form Genitivus, followed by the used part of a plant.

b) Expressions with an agreed attribute signifying 'nomen specificum' of the plant or modifying the noun (*noun+adjective/s* – phrase structure):

Arnica montana (Mountain Arnica)
Lavandula angustifolia (Common lavender)
Tabulettae obductae (coated tablets)

c) Expressions with three or four nominal structures (*noun+noun +adjective+adjective* – phrase structure):

Propolis emulsio spirituosa (Alcochol emulsion of/from propolis)
Urticae folia exsicata (Dried leaves Nettle)
Saponariae extractum aquosum calidum (Hot aqueous extract of soapwort)

d) Chemical expressions (*chemical element + (compound) noun* – phrase structure):
Natrii citras (sodium citrate)
Magnesii sulfas (magnesium sulfate)
Morphini hydrochloridum (morphine hydrochloride)

All the structures the students have to learn are based on the Latin grammar dealing with Nominativus and Genitivus case forms given in singular or plural form. Depending on the lexical entities, the expressions could be longer or shorter, but the grammatical part is strictly limited to the use of both case forms. This provides a relation to the anatomical topography where the same cases are in use for the idioms describing the body. A part of the verbal sentences in use in pharmacy like formulae insisting certain procedures for processing like:

Divide in partes aequales №… (Divide in equal parts… in number)
Da tales doses №… (Give…such doses)
Misce fiat …. (Mix to prepare…)
Adde quantum satis (q.s.) (Add the necessary amount…), etc.

The rest of the grammar entities concern cases and declension of Latin nouns, adjectives and numerals. Thus, the examples for instruction and teaching materials rely on significant lexical content, so that these structures in common use have to be memorized. Names largely used from the pharmaceutical vocabulary are those of: plants, chemicals, drug forms, parts of plants and substances. A good level of advanced competences of the learners involves easiness of decoding Latin and Greek roots from any compound names. The principle is to understand as much as possible from the meaning of name as a result of this training in Latin. Some possible practice in this field is the assumption of as many meanings from the names distributed on the market, because future pharmacists and pharmacy assistants will work with commercial drug forms.

2. Notes on drug names

The names of professional areas are used for specific purposes. They are usually called terms because they have to correspond on this basic knowledge – classification, standardization, regulation (Petkova et al. 2024: 633). The names of medicines are not terms by classical definition, but they are constructed by following strictly terminological strategies for constructing a lexical unity. Though all over the world drugs are being sold with different commercial names, the onymization of medicines obeys some rules prescribed by the *International Nonproprietary Names* (INN) and the regulations of the *World Health Organization* (WHO). Somehow the variety of brand names reminds a Babylon tower (Serafini et al. 2021: 4410). We can use this metaphor for showing local and international principles that illustrate methods for drug names and drug naming.

The chemical substances are regulated by *The International Union of Pure and Applied Chemistry* where the names have unique identifiers (Serafini et al. 2021: 4410). It is definitely impossible to gather the chemical substances and to maintain them as brand names of drugs, because they are difficult for memorizing and too long for pronunciation. That is why brand names of drugs are widespread in all countries and recognized as a commercial way to interact with customers who can more easily memorize a brand name than a chemical substance. European legislation contributed to this by regulations for setting principles about brand naming. After the II World War in the early 50's, the WHO insisted that the European Pharmacopeia should recognize the brand names and include them along with chemical substances. This led to the appearance of INN, which is a system for the identification of drugs. In cooperation of with this body, a lot of agencies have contributed to submitting worldwide common or similar brand names of drugs, also indicating their therapeutic effects. A lot of experts of different structures work together for setting principles and initial standards for the drug forms and their presence on the market. The scientists who take part in this committee come from different fields, being mainly medical specialists, but also chemists and pharmacologists. As part of INN, there is also experts' groups of national naming agencies, pharmacopeia experts, Anatomical Therapeutic Chemical Classification System (ATC) code experts. The INN system is based on rules of convention and when a particular drug comes along on the trade market, its name has to be considered with all recommendations considered by INN and external experts.

The Committee of INN accepts to modify drug names, considering the opinions of experts. Depending on their professional fields of knowledge, specific impact on the name could prevail (Serafini et al.

2021: 4411) like herbal preparation, chemical component or an additive. What the INN list proposes is stems, located at the end of the drug name (Serafini et al. 2021: 4412). These stems are monosyllabic or of two syllables and their purpose as part of the drug names is to show related features of the drug agents. The stem can be used as a suffix, a prefix or an infix. In order to illustrate the rules mentioned, some examples of stems published in *The use of stems in the selection of International Nonproprietary Names (INN) for pharmaceutical substances* by the WHO[1], as well as their definitions, are provided below:

Stem	*Definition*
adol-/-adol-	analgesics
andr-	steroid, androgens
anserin-	serotonin receptor antagonist
ase-	enzymes
astine-	antihistaminics
bufen-	anti-inflammatory analgesics, phenylbutazone derivatives
-caine	local anaesthetics
-cillin	antibiotics, 6-aminopenicillanic acid derivatives
-drine	sympathomimetics

What paradigms lay in the decision of choosing these stems is a question with more than one answer. Officially the names are part of formal procedures and negotiations among specialists participating in a committee or a team. What is usually considered when choosing a drug name is that it should contain a stem that is in relation to a

[1] The use of Stems in the Section of International Nonproprietary Names (INN) for Pharmaceutical Substances 2018 (StemBook2018), World Health Organization 2018, Geneva, Switzerland.

pharmacologically related group to which the substance belongs. The classification with corresponding examples of stem and definitions looks like this:

A220 Hypnotic sedatives, other **-clone** hypnotic tranquillizers
A420 Analgesics – Antipyretics **-ac** anti-inflammatory agents, ibufenac derivatives
C100 Anxiolytic sedatives **-azenil** benzodiazepine receptor antagonists/agonists (benzodiazepine derivatives)
C300 Antidepressants **-fensine** Norepinephrine, serotonin, dopamine reuptake inhibitors
F100 Spasmolytics, general -**verine** spasmolytics with a papaverine-like action

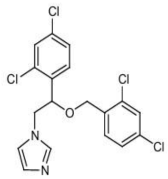
Brand names of drugs are usually labeled under permission after demand of the trader directed to WHO. Here are two examples of the alphabetical stem and the corresponding INN:

		USAN
-clone	**hypnotic tranquillizers**	
A.2.2.0	(USAN: hypnotics / tranquillizers (zopiclone type))	
(a)	barbexaclone (16), eszopiclone (87), pagoclone (74), pazinaclone (70), suproclone (46), suriclone (43), suproclone (46), zopiclone (39)	
(b)	gestaclone (23), pimeclone (20)	

BAN; USAN

-conazole (x) **systemic antifungal agents, miconazole derivatives**

S.4.0.0 (BAN: systemic antifungals of the miconazole group)
(USAN: systemic antifungals (miconazole type))



(a) albaconazole (87), aliconazole (43), alteconazole (53), arasertaconazole (93), azaconazole (45), becliconazole (65), brolaconazole (58), butoconazole (40), cisconazole (59), croconazole (55), (cyproconazole (ISO)), dapaconazole (111), democonazole (42), (diniconazole (ISO $C_{17}H_{17}Cl_2N_3O$)), doconazole (37), eberconazole (64), econazole (27), efinaconazole (104), embeconazole (92), enilconazole (44), (etaconazole (ISO)), fenticonazole

The *-clone* stem signifying hypnotic tranquillizers and *-conazole(x)* is used for the treatment of fungal diseases. The abbreviations given as USAN and BAN are United States Approved Names and British Adopted Names dictionaries are set apart whenever the definitions are different from INN.

The information about brand names of drugs can give an opportunity for the students to demonstrate skills referring to different part of the Latin syllabus, like for instance:

- *Cardiostad* 5mg: ***cardio-*** Greek combining form meaning 'heart' and the suffix -***stad***, significant for the vasodilators like alpro**stad**il.

This combination of Greek or Latin by origin root examines the acquired vocabulary and the second part of the name suggests the medical effect that the substance might exercise on the body condition.

- *Bromh**exine***, Sopharma 8 mg tablets: the active substance *bromhexine hydrochloride* is easy to be recognized here as the name shows it, but it also contains the stem -**exine** used for all mucolytics that eliminates mucous from digested bronchi.
- *Xylomet**azolin*** and *Cef**azoline*** – the suffix ***-azolin*** that is recognized here is firm for antihistamines or local vasoconstrictors, antazoline derivatives.

While the first medicine is in a form of a spray for nasal aadministration, the second one is a form of antibiotic. Both substances are listed in INN with description of substances and chemical structure. So, the stem can be used in accordance with the definition or not but all the possible cases are listed in INN Stem books.

3. Putting brand names into teaching practice

We can outline some principles over which naming of medications is applied.

a) Containing stems approved by INN and WHO:

AZLOCILLIN

-cillin- represents antibiotics, 6-aminopenicillanic acid derivatives;

Azo- refers to hydrogen-containing substances.

FOSINOPRIL

Fosino- used as vasodilating drug, it is a phosphorus inhibitor;

-pril is a suffix for a lot of an angiotensin-converting enzyme (ACE) inhibitor.

b) Containing parts of the body:

OCUVITE, 30 tablts.
ocu- comes from Latin "oculus, -i, m. - an eye";
-vite essentially must come from vitamins, because this food additive is enriched in Vit. A, C, E.

CONCOR, tablts., 30 mg
con- is a prefix used to denote interaction or togetherness;
the building element *-cor* is derived from the Latin "cor, cordis, n. – heart".

CEREBRUM forte
The onym represents a direct use of the Latin "cerebrum, -i, n. – brain" with the adjective neuter gender form *forte* of "fortis, e – strong" added. The adjective implements the good and quick effect of the medicine.

The next onym is a perfect example to illustrate how the collaboration between the three main languages that dominate in contemporary medical and pharmaceutical terminology, i. e. Greek, Latin, and English, may be used as marketing strategy tool.
STOMACHON x 30 capsules
The onym is derived by means of conversion by the Latinized variation of the Greek "stomachon, -i, n. – stomach" that represents a synonymous term for the Latin per se "ventriculus, -i, m. – stomach" and the Greek term element "gastr-". But it also may be accepted by the common people, the customers, who are not supposed to be specialists in the language of medicine as a simple word game due to the strong influence of English – *stomach on* with a meaning "the stomach is on, it starts working again".

c) Containing part or entire name of the active substance:
HEMFERUM 14 mg film tablets
hem- from the Latinized variation of the Greek "haema, -matis, n.- blood", a synonymous term for the Latin "sanguis, -inis, m."; it is also used as a Greek term element for building compound clinical terms;
The second part of the onym comes from the Latin names of the chemical element "Ferrum, -i, n. – iron".

PARACETAMOL 500 mg tablets
The onym is derived by the means of conversion by the name of active substance coincides with the drug.

d) Containing a numeral:
NAKLOFEN DUO 75 mg modified release capsules
Naklofen is likely a brand name for diclofenac, a nonsteroidal anti-inflammatory drug (NSAID) used to treat pain and inflammation, while *Duo* might refer to a combination of immediate-release and extended-release diclofenac in the same capsule.

e) Containing disease or condition of the body:
DIABECAN x 60 capsules
Diabe- the name suggests it might be related to diabetes management, from Ancient Greek "διαβήτης" (diabētēs), which meant "passing through" or "siphon". The drug could be a supplement or medication aimed at supporting blood sugar control. *Can* may be a suggestion of efficacy or capability.

HERBITUSSIN

The onym represents a combination between "herbi-" suggesting herbal and derived probably by the Latin “herba, -ae, f. – herb”, while the second element "-tussin" is a reminiscent of cough medicines and comes from the Latin “tussis, -is, f. – cough”.

CICATRIDINA

Cicatri- is often related to scarring or wound healing and is probably derived from the Latin “cicatrix,-icis, f.- scar”. It is a product for promoting wound healing or reducing scar formation. A great variety of products containing the same onym are appearing recently – for decubital wounds, for hemorrhoids, for treating burn areas and so on.

MIGRENOL

Migre- the name suggests it's related to migraines, a Latinized word with a French origin used as an official medical term. It is a medication or supplement intended for migraine relief or prevention.

f) Herbal preparation with the name of the plant:

MUCOPLANT ANISOL 100 mg capsules soft

Mucoplant consists of element "muco-" which is a prefix that suggests the medicine might be related to mucus or the mucous membranes and “plant” that is probably related to the Latin word “planta, -ae, f. – plant” and its mentioning prompts about the herbal ingredients in the product content.

Anisol is from *Anisi stellati aetheroleum* and it could be referring to anise or aniseed, herb known for its distinctive flavor and potential medicinal properties.

TRIBESTAN® 250 mg film-coated tablets

Tribestan is often associated with a product containing an extract from the plant *Tribulus terrestris herba extraction siccum*.

g) The name reminds the directions for administration:
GELOMIRTOL
The Latin root "gel-" from “gelu, -us, n. – ice” is more closely associated with the medicinal use of the myrtle plant-derived oils, as myrtle has traditionally been used to treat respiratory conditions involving cold, phlegm, and mucus, while "myrtol" refers to the myrtle plant-derived essential oils.

h) The drug name suggests the effect it brings about:
APITONIN/ HYPOTONIN
The suffix **-tonin** in drug names is typically used to indicate that the drug is a serotonin receptor agonist or modulator. Serotonin is a neurotransmitter in the brain that plays a key role in regulating mood, sleep, appetite, and other bodily functions. Drugs that target the serotonin system can have various therapeutic applications, such as:

1. Antidepressants: Drugs like fluoxetine (Prozac), paroxetine (Paxil), and sertraline (Zoloft) use the *-tonin* suffix and work by increasing serotonin levels in the brain.
2. Anti-migraine drugs: Drugs like sumatriptan (Imitrex) and rizatriptan (Maxalt) use the "-tonin" suffix and act as serotonin receptor agonists to help relieve migraine symptoms.
3. Sleep aids: Drugs like ramelteon (Rozerem) use the "-tonin" suffix and target serotonin receptors to help regulate the sleep-wake cycle.
4. Appetite suppressants: Drugs like lorcaserin (Belviq) use the "-tonin" suffix and work by activating serotonin receptors in the brain to suppress appetite.

In summary, the "-tonin" suffix in drug names indicates that the drugs target or modulate the serotonin system, which can have various therapeutic applications in the field of medicine.

Conclusions

As presented in the introductory part of the research, the information about drug names and the patterns used for their building is often omitted or introduced briefly to the future specialists in medical universities in Bulgaria. Unfortunately, little if any attention is paid to the important role of these onyms as an essential part of the contemporary Latin pharmaceutical terminology. This information given in advance in teaching resources for the principles of INN construction and regulation might be useful for mastering Latin for pharmaceutical purposes more efficiently. It could be included in lexical practical exercises using brand names of drugs which are current on the local market (in our case, on Bulgarian trade market).

The investigation is also an attempt to show that revealing and decoding the literary meaning of a drug brand name may give extralinguistic information about its ingredients or target patient groups, for instance. To avoid misinterpretation, knowledge about the component elements of a drug name as well as their correct translation from Latin and/or Greek is needed. It is not a hard task due to the strong influence of English over these classical languages causing misleading parallels with modern familiar common words.

Bibliography

A. Books:

Marzano, A. (2022): Plants, Politics and Empire in Ancient Rome, University of Reading and University of Bologna: Cambridge University Press.

B. Articles:

“The use of stems in the selection of International Nonproprietary Names (INN) for pharmaceutical substances”, Geneva: World Health

Organization; 2018 (WHO/EMP/RHT/TSN/2018.1). Licence: CC BY-NC-SA 3.0 IGO.

Petkova, G., Kelbecheva, V., Ivanova, V. (2024): "(In)correctness of Eponyme Use in the Field of Medicine", in *Name and Naming. (In)correctness in Onomastics. Proeedings of the Sixth International Conference on Onomastics "Name and Naming"*, Cluj-Napoca: Mega, pp. 635-643.

Serafini, M. Cargnin, S., Massarotti, A., Tron, G., Pirali, T., Genazzani, A. (2021): "What's in a Name? Drug Nomenclature and Medicinal Chemistry Trends using INN Publications" in *Journal of Medicinal Chemistry, no.64 (8), ACS Publications*, pp. 4410-4429.

Terenyi, J. "Impact of Spacing of Practice on Learning Brand Name and Generic Drugs", in *American Journal of Pharmaceutical Education*, vol. 82(1), article 6179, pp. 50-57.

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Selected publications:

(2024): "Transfer and Adaptation: Languages and Cultures in Dialog" (The Balkans from Late Antiquity to Early Modern Times) (Kelbecheva. V.) Chronicle of a Conference Conducted From 24th to 26th of January 2024 in Sofia. сп. Балканско езикознание (Linguistique balkanique) lxiii (2024),2 ISSN: 0324-1653. sjr 0.101, q 4, c.174-179.

(2024): "(In)correctness of eponym use in the field of medicine (Gergana Pekova, Veronika Kelbecheva, Vanya Ivanova), in NAME AND NAMING. Proceedings of the Sixth International Conference on Onomastics "Name and Naming". (In)correctness in Onomastics. Cluj-Napoca: Mega, pp. 633-643.

(2024): "La possibilité de traduire la poésie antique latine : quelques versions françaises, anglaises et bulgares de la poésie ovidienne et d'une épitaphe latine.(Veronika Kelbecheva) Speech and Context, Volume

1(xv)2023, SDOIs :https://doi.org/10.20235/lc.2023(1),https://doi.org/10.5281/zenodo.8414874, ISSN: 1857-4149. c. 96. < https://www.usarb.md/limbaj_context/vol/vol12023.html>.

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Selected publications:

(2024): o(In)correctness of eponym use in the field of medicine (Gergana Pekova, Veronika Kelbecheva, Vanya Ivanova), in NAME AND NAMING. Proceedings of the Sixth International Conference on Onomastics “Name and Naming”. (In)correctness in Onomastics. Cluj-Napoca: Mega, pp. 633-643.

(2024): “Posh Anthroponyms in Northern Bulgaria” (Gergana Petkova), in Onomástica desde América Latina, v.5, janeiro -dezembro, 2024, pp. 1–5.

(2023): “Foreigners in the Bulgarian anthroponymic system. Is it true that parents in Bulgaria prefer non-traditional variations of traditional given names? (Gergana Petkova)”, in: Bijak, U., Swoboda, P., Walkowiak, J. B. (eds.), Onomastics in Interaction with Other Branches of Science. Proceedings of the 27th International Congress of Onomastic Sciences. Vol. 2 Anthroponomastics, pp. 371-387. Cracow: Jagiellonian University Press.