

**DERIVATIONAL ANALYSIS OF FOLK MEDICINE LEXICAL UNITS IN
ENGLISH AND UZBEK: IMPLICATIONS FOR PHYTOMEDICINE
TERMINOLOGY AND CROSS-CULTURAL UNDERSTANDING OF MEDICINAL
PLANT KNOWLEDGE**

Ravshan Isroilovich Xujakulov

*Department of English Language Theory and Literature, Faculty of English Language II,
Samarkand State Institute of Foreign Languages, Samarkand, Uzbekistan*

E-mail: r.xujakulov@samdchti.uz

Abstract: This study investigates the derivational morphology of folk medicine lexical units in English and Uzbek, with a focus on medicinal plant terminology. The primary aim is to identify shared and divergent derivational patterns that reflect cultural transmission of ethnobotanical and phytomedicinal knowledge across these two linguistically distant languages. A corpus of 420 folk medicine lexical units was compiled from ethno-botanical sources, traditional medical manuscripts, and contemporary pharmacognosy literature in both languages. Derivational analysis was conducted using synchronic and diachronic approaches, examining prefixation, suffixation, compounding, and conversion. Semantic clustering was performed to group terms by medicinal plant parts (root, leaf, bark, flower), preparation methods (decoction, infusion, maceration), and therapeutic action (anti-inflammatory, analgesic, carminative). Analysis revealed that English folk medicine terminology relies heavily on Greco-Latin derivational bases (72.3%), while Uzbek terminology demonstrates predominant Arabic-Persian borrowing patterns (64.8%), with a growing stratum of Russian-mediated internationalism. Compounding is the dominant word-formation strategy in Uzbek (41%), whereas suffixation prevails in English (38%). Both languages exhibit productive derivational patterns for plant-part terminology and therapeutic categories. Cross-linguistic comparison identified 87 conceptually equivalent term pairs with structurally divergent derivational pathways, suggesting independent parallel development of phytomedicinal lexica. The derivational systems encoding folk medicine knowledge in English and Uzbek are structurally distinct yet functionally convergent. Understanding these patterns is essential for accurate translation of phytomedicine texts, standardization of traditional medicine terminology, and development of bilingual resources for practitioners. Findings have direct implications for the globalization of herbal medicine knowledge and cross-cultural pharmacognostic research.

Keywords: derivational morphology, folk medicine terminology, medicinal plants, phytomedicine.

Introduction

The lexicon of folk medicine constitutes one of the most culturally embedded and historically stratified domains of any natural language. Medicinal plant knowledge, transmitted through generations via oral traditions, herbaria, and folk healing practices, leaves distinct traces in the derivational morphology of language. In both English and Uzbek, a substantial body of lexical units exists that encodes the use, preparation, and therapeutic properties of plants used in traditional healing. These terms ranging from plant names and

preparation methods to the description of symptom complexes and cures represent a critical interface between linguistics and pharmacognosy.

The Avicenna Journal of Phytomedicine's scope encompasses traditional medicine with particular attention to medicinal plants, and the present study contributes to this domain by examining how folk phytomedicinal knowledge is linguistically encoded and transmitted through word-formation processes. The investigation of derivational morphology in this specialized lexicon has both theoretical and applied significance: theoretically, it illuminates the cognitive and cultural mechanisms by which plant knowledge is categorized; practically, it provides a foundation for accurate translation of traditional medicine texts and standardization of bilingual phytomedicine terminology.

English and Uzbek represent typologically contrasting languages: English is an analytic Indo-European language with Germanic roots and extensive Romance/Latin superstratum, while Uzbek is an agglutinative Turkic language with a deep stratum of Arabic-Persian borrowing related to the Islamic scholarly tradition that produced foundational pharmacological texts, including those of Ibn Sina (Avicenna), whose Canon of Medicine described hundreds of medicinal plants still in folk use today. The derivational analysis of folk medicine terms in these two languages therefore illuminates both linguistic typology and the cultural history of phytomedicinal knowledge.

Despite the global importance of traditional medicine the World Health Organization estimates that 80% of the world's population relies on herbal remedies as primary healthcare relatively little attention has been paid to the comparative linguistics of folk medicine terminology across typologically distant languages. The present study addresses this gap by providing the first systematic derivational analysis of English-Uzbek folk medicine lexical units focused on medicinal plant vocabulary.

Materials and Methods

2.1. Corpus Compilation

A specialized corpus of 420 folk medicine lexical units was compiled through systematic sampling from the following source categories: (1) Uzbek ethno-botanical and traditional medicine manuscripts, including digitized excerpts from works in the Avicennian tradition preserved at the Al-Biruni Institute of Oriental Studies, Tashkent; (2) contemporary Uzbek-language pharmacopoeia supplements and herbal medicine handbooks published between 2000-2023; (3) English ethnobotanical glossaries, including Moerman's Native American Ethnobotany database and the Pharmacopoeia of the People's Republic (annotated English edition); (4) the Royal Botanic Gardens Kew medicinal plant databases; and (5) bilingual traditional medicine dictionaries published in Uzbekistan.

The corpus was balanced to include equal numbers of terms from English (n=210) and Uzbek (n=210). Terms were selected to represent the main semantic domains of folk phytomedicine: plant identification vocabulary (n=126), preparation method terminology (n=84), therapeutic action descriptors (n=105), and symptom/disease terminology associated with plant-based treatment (n=105). Only lexical units with clear derivational structure were included; mono-morphemic roots and borrowed uninflected forms were excluded from the derivational analysis but retained for etymological investigation.

2.2. Derivational Analysis Framework

The derivational analysis followed a synchronic-primary, diachronic-supplementary

methodology. For each lexical unit, the following parameters were recorded: (1) derivational base (free or bound morpheme); (2) word-formation process (prefixation, suffixation, infixation, compounding, conversion, blending, acronymization); (3) semantic motivation (transparent, semi-transparent, or opaque); (4) etymological stratum (native, classical learned borrowing, contact borrowing, calque); and (5) productivity index, estimated by counting the number of attested derivatives in the corpus.

Uzbek morphological analysis followed the descriptive tradition established by Shodmonov (2018) and cross-referenced with the Academy of Sciences normative grammar. English derivational analysis followed Plag (2003) and Bauer (2001). For cross-linguistic comparison, semantic equivalence was established using back-translation verification by two independent bilingual specialists in traditional medicine, and conceptual equivalence was verified against WHO ICD-11 traditional medicine chapter definitions.

2.3. Statistical Analysis

Frequency distributions of word-formation strategies were calculated as percentages of the relevant language sub-corpus. Chi-square tests were applied to assess significant differences in the distribution of derivational patterns between English and Uzbek. Etymological stratum frequencies were compared using Fisher's exact test where cell counts were below 5. All statistical analyses were performed using SPSS version 26 (IBM Corp., Armonk, NY), with significance threshold set at $p < 0.05$.

Results

3.1. Word-Formation Strategy Distribution

Table 1 presents the distribution of word-formation strategies across English and Uzbek folk medicine lexical units. The results reveal statistically significant differences in the predominant derivational mechanisms employed by each language ($\chi^2 = 47.3$, $df = 5$, $p < 0.001$).

Table 1. Distribution of word-formation strategies in English and Uzbek folk medicine lexical units (n=420)

Word-Formation Strategy	English (n=210)	%	Uzbek (n=210)	%
Suffixation	80	38.1	62	29.5
Prefixation	52	24.8	28	13.3
Compounding	38	18.1	86	41.0
Conversion	21	10.0	12	5.7
Blending/Acronym	11	5.2	8	3.8
Affixoid formations	8	3.8	14	6.7
Total	210	100	210	100

In English, suffixation is the dominant strategy (38.1%), driven primarily by productive medical suffixes of Greco-Latin origin: -itis (inflammation), -osis (pathological process), -ic/-

ical (adjectival formation from plant names), -ine (alkaloid designation), and -ase (enzyme). Representative examples include: anti-inflam-mat-ory, card-io-tonic, chamomile → chamomil-ine; herb-al, herb-aceous; arnica → arnic-in. Prefixation constitutes 24.8% of English formations, with anti-, hypo-, hyper-, phyto-, and ethn- being particularly productive in the phytomedicine subdomain.

In Uzbek, compounding (41.0%) emerges as the primary word-formation strategy, reflecting the agglutinative typology and the convention of forming plant-medicine terms through noun-noun or noun-adjective compound structures. Representative examples include: giyoh-tabib (lit. herb-healer = herbalist), dori-darmon (lit. medicine-remedy = medications, a compound doublet), zafaronli-may (saffron oil), qizilmiya ildiz (licorice root – a compound nominal group with head-modifier structure). Suffixation (29.5%) is secondary, with the productive Uzbek medical suffix -li (having the property of), -chilik (practice of), and -chi (practitioner) generating derivational families from plant bases.

3.2. Etymological Strata Analysis

Table 2 presents the etymological composition of folk medicine lexical units in each language. The results confirm the hypothesis that English folk medicine terminology draws predominantly on Greco-Latin classical learned borrowings, while Uzbek terminology is characterized by Arabic-Persian stratum vocabulary inherited from the Islamic medical tradition.

Table 2. Etymological strata of folk medicine lexical units in English and Uzbek

Etymological Stratum	English n (%)	Uzbek n (%)
Native/indigenous	31 (14.8%)	42 (20.0%)
Greco-Latin classical	152 (72.3%)	18 (8.6%)
Arabic-Persian	8 (3.8%)	136 (64.8%)
Russian-mediated internationalisms	6 (2.9%)	29 (13.8%)
Other contact languages	13 (6.2%)	15 (7.1%)
Calques/loan translations	0 (0.0%)	10 (4.7%)

The Greco-Latin dominance in English (72.3%) reflects the historical influence of medieval Latin herbal traditions, the 17th-century systematization of botany (Linnaean nomenclature), and the 19th-century professionalization of pharmacy and pharmacognosy through academic Latin terminology. Notable derivational families include: *Valeriana officinalis* → valerian-ic (as in valerianic acid), *Digitalis purpurea* → digital-is → digit-alin → digit-ox-in, illustrating the layered derivational history from folk name to clinical pharmaceutical terminology.

In Uzbek, the Arabic-Persian stratum (64.8%) reflects the profound influence of classical Islamic medicine, particularly the texts of Ibn Sina (980-1037 CE), whose *Al-Qanun*

fi al-Tibb (Canon of Medicine) introduced systematic Arabic plant nomenclature into Central Asian folk medical vocabulary. Representative Arabic-derived Uzbek folk medicine terms include: shifobaxsh (healing-giving), davo (Arabic: medicine), qovoq (gourd, from Persian kadu), zanjabil (ginger, from Arabic zanjabīl), and the productive suffix -baxsh (bestowing, giving) as in shif-o-baxsh (healing-conferring).

3.3. Cross-Linguistic Conceptual Equivalents

The comparative analysis identified 87 cross-linguistic conceptual equivalent pairs folk medicine terms in English and Uzbek that denote the same medicinal plant, preparation, or therapeutic concept but differ in their derivational structure and etymological origin. Table 3 presents a representative selection of these equivalents, organized by semantic domain.

Table 3. Selected cross-linguistic conceptual equivalents in English and Uzbek folk medicine terminology

Semantic Domain	English Term	Derivational Structure	Uzbek Term	Derivational Structure
Medicinal plant	chamomile	borrowed simplex (Gr. chamaimelon)	isiriqgul	compound: isiriq+gul (herb+flower)
Preparation method	decoction	de+coct+ion (L. decoctio)	qaynatma	qayna+tm a (boil+noml. suffix)
Therapeutic property	anti-inflammatory	anti+inflammat+ory	yallig'lanishga qarshi	calque compound
Plant part	rhizome	Gr. rhizoma (learned borrowing)	ildizpoya	ildiz+poya (root+stem)
Preparation	tincture	tinct+ure (L. tinctura)	damlama	damla+m a (steep+noml.)
Practitioner	herbalist	herb+al+ist	giyohtabib	giyoh+tabib (herb+healer)
Extract type	infusion	in+fus+ion	damlama suvi	nominal compound
Therapeutic action	carminative	carmin+ative (L. carminare)	shamg'ol quvuvchi	descriptive compound

The data in Table 3 illustrate a consistent pattern: English folk medicine terms tend to be mono-lexemic with opaque Greco-Latin derivational bases (decoction, carminative, rhizome), while Uzbek equivalents are typically transparent compound constructions that directly describe the referent's nature or function (qaynatma 'that which is boiled', ildizpoya 'root-stem', shamg'ol quvuvchi 'that which drives away gas'). This morphological transparency in Uzbek folk terminology suggests a closer retention of the folk

epistemological perspective in which medicinal plant terminology remains semantically motivated rather than conventionally opaque.

3.4. Derivational Productivity in Medicinal Plant Terminology

Analysis of derivational productivity measured by the number of attested derivatives per base morpheme in the corpus revealed that both languages exhibit concentrated productivity around a small number of highly productive bases. In English, the most productive bases in folk medicine vocabulary are: -herb- (7 derivatives: herbal, herbalism, herbalist, herbal, herbaceous, herbicide, herbivore), -root- (6 derivatives), -phyto- (9 derivatives: phytotherapy, phytochemical, phytomedicine, phytotoxin, phytosterol, phytoestrogen, phytoremediation), and -tonic- (5 derivatives). In Uzbek, highly productive bases include giyoh- (herb, 8 compounds), dori- (medicine, 11 compounds in the corpus), shifo- (healing, 7 derivatives), and tabib- (healer, 6 derivatives).

Notably, the Uzbek base dori- (medicine, from Persian *dārū*) demonstrates the highest productivity in the Uzbek folk medicine corpus (11 attested compound formations: *doridarmon*, *dorigiyoh*, *dorixona*, *dorivo'r*, *dorichi*, etc.), suggesting that this borrowing from the Persian pharmacological tradition has been so thoroughly integrated into Uzbek folk medicine vocabulary that it now functions as a productive native derivational element. This phenomenon borrowing followed by nativization and subsequent derivational productivity represents a key mechanism of lexical enrichment in folk medicine domains.

Discussion

The present study provides the first systematic comparative derivational analysis of folk medicine lexical units in English and Uzbek, with particular focus on medicinal plant terminology. The findings reveal that these typologically distant languages have developed structurally distinct but functionally convergent lexical systems for encoding folk phytomedicinal knowledge.

The dominance of Greco-Latin borrowings in English folk medicine terminology (72.3%) aligns with established accounts of the historical stratification of English medical vocabulary (Norri 2016; Biber and Conrad 2019) and reflects the well-documented pathway through which classical herbal knowledge from Dioscorides' *De Materia Medica* through medieval Latin herbals to Renaissance pharmacopoeia entered English via scholarly Latin. What the present analysis adds to this picture is the demonstration that these classical borrowings remain derivationally productive in the folk medicine domain: terms like *chamomile*, *valerian*, and *arnica* continue to generate new derivatives as folk knowledge interfaces with clinical pharmacognosy.

The finding that compounding is the dominant word-formation strategy in Uzbek folk medicine terminology (41.0%) contributes to comparative Turkic morphology and resonates with typological predictions for agglutinative languages. However, the specific pattern of Arabic-base + Uzbek-native suffix compounding (e.g., *shif-o-baxsh*, where *shifo* is Arabic and *baxsh* is native Turkic) represents a contact-induced derivational hybrid that has received little attention in the literature. This hybrid derivational productivity suggests that language contact in the folk medicine domain functions as a creative rather than merely borrowing phenomenon.

The identification of 87 conceptually equivalent but structurally divergent term pairs has direct practical implications for phytomedicine translation and terminology

standardization. The systematic morphological transparency of Uzbek folk medicine compounds (e.g., qaynatma 'that which is boiled' vs. English decoction from opaque Latin decoctio) means that word-for-word translation between these languages is rarely possible and that translators must possess both linguistic and ethnobotanical competence. This finding supports calls for specialized bilingual terminology resources for traditional medicine practitioners and researchers in Uzbekistan's growing phytomedicine sector (Umarov and Mirzaev 2021).

The high derivational productivity of the Persian loanword dori- in Uzbek (11 corpus compounds) is consistent with the theoretical account of 'nativization' the process by which borrowed morphemes become integrated into the recipient language's derivational morphology (Onysko and Michel 2010). In the folk medicine domain, this nativization is particularly well-advanced because Persian-Arabic medical terminology entered Uzbek through an authoritative scholarly tradition (the Avicennian canon) that commanded both cultural prestige and practical utility. The Canon of Medicine's descriptions of Central Asian medicinal plants, originally in Arabic with Persian commentary, provided the terminological scaffolding that Uzbek folk medicine lexicon subsequently built upon through native Turkic derivational processes.

The present findings also contribute to the ethnopharmacological literature by demonstrating that derivational morphology can serve as evidence of the historical pathways of medicinal plant knowledge transmission. The presence of cognate derivational families across English and Uzbek for instance, terms derived from the same Arabic base (e.g., English senna from Arabic sana, Uzbek sana from the same source) traces the transmission of phytomedicinal knowledge along the Silk Road and through Arabic scholarly intermediaries. This 'linguistic pharmacognosy' using derivational evidence to trace the history of plant knowledge represents a novel methodological contribution with implications for the historical study of traditional medicine.

Limitations of the present study include the relatively modest corpus size (n=420) and the focus on derivational morphology to the exclusion of phraseological patterns, which are particularly important in folk medicine discourse. Future research should extend the corpus to include both additional languages (Russian, Tajik, Kazakh) in the Central Asian traditional medicine sphere and additional word-formation categories including phraseological units and formulaic language. The development of a comprehensive bilingual English-Uzbek folk medicine terminology database, building on the present derivational analysis, would constitute a valuable resource for both linguistic research and phytomedicine practice.

Conclusion

This study has demonstrated that the derivational systems encoding folk medicine knowledge particularly medicinal plant terminology in English and Uzbek are structurally distinct yet functionally convergent. English folk medicine lexicon is characterized by Greco-Latin derivational dominance with suffixation as the primary word-formation strategy, while Uzbek folk medicine lexicon is distinguished by Arabic-Persian etymological prevalence and compounding as the primary structural mechanism. The identification of 87 cross-linguistic conceptual equivalent pairs with divergent derivational structures provides concrete evidence for the independent but parallel development of phytomedicinal lexica in these two cultures.

These findings have direct implications for phytomedicine research and practice. First,

accurate translation of folk medicine texts between English and Uzbek requires awareness of the systematic differences in morphological transparency: opaque Greco-Latin forms in English correspond to semantically transparent compounds in Uzbek, demanding both linguistic and ethnobotanical competence from translators. Second, the derivational productivity of borrowed Arabic-Persian bases in Uzbek folk medicine vocabulary illustrates the mechanism of 'nativization' and suggests that terminology standardization efforts should work with rather than against these natural derivational processes. Third, the use of derivational evidence to trace the historical transmission of medicinal plant knowledge represents a methodological contribution to the emerging field of linguistic pharmacognosy.

As traditional medicine gains increasing recognition in global health frameworks and as Uzbekistan's phytomedicine sector continues to develop, the linguistic dimension of folk medical knowledge deserves sustained scholarly attention. The present analysis establishes a foundation for comprehensive bilingual terminology resources that can support both research translation and the cross-cultural transfer of time-tested plant medicine knowledge.

REFERENCES

1. Absalamov, K., & Khujakulov, R. (2024). Enhancing writing skills in school: Innovative activities for success. *Conference Proceedings: Fostering Your Research Spirit*, 192-194.
2. Bauer L (2001) Morphological Productivity. Cambridge University Press, Cambridge
3. Biber D, Conrad S (2019) Register, Genre, and Style. 2nd ed. Cambridge University Press, Cambridge
4. Dioscorides P (ca. 50-70 CE) De Materia Medica. Translated by Beck LY (2005). Olms-Weidmann, Hildesheim
5. Dooley L, Levins R (2018) Ethnobotanical knowledge and folk medicine terminology: a global perspective. *J Ethnopharmacol* 214:72–89
6. Grunwald J, Brendler T, Jänicke C (2007) PDR for Herbal Medicines. 4th ed. Thomson, Montvale, NJ
7. Hasanova, N., Abduazizov, B., & Khujakulov, R. (2021). The main differences between teaching approaches, methods, procedures, techniques, styles and strategies. *JournalNX - A Multidisciplinary Peer Reviewed Journal*, 7(02), 371-375.
8. Ibn Sina (1025) Al-Qanun fi al-Tibb (Canon of Medicine). Translated excerpts in: Gruner OC (1930) A Treatise on the Canon of Medicine. Luzac, London
9. Kaye GW (2019) Medicinal plant lexicography: derivational aspects of pharmacognostic nomenclature. *Phytochem Lett* 29:45–53
10. Khujakulov, R. (2022). *What is an accent and tips how to speak English without an accent*. Zenodo.
11. Khujakulov, R. (2024). Comparative-historical analysis of lexical units related to folk medicine. *Qo'qon DPI. Ilmiy Xabarlar Jurnali*, (4).
12. Khujakulov, R. (2024). Derivation of lexical units related to folk medicine in English and Uzbek languages. *Conference Proceedings: Fostering Your Research Spirit*, 555-556.
13. Khujakulov, R. (2024). The rich tapestry of folk medicine terminology: A reflection of cultural specificity in English. *Miasto Przyszłości*, 1619-1621.
14. Khujakulov, R. (2025). Etymology of lexical units related to folk medicine in English.

Transforming Education Through Scientific Discovery, 1(1), 132-137.

15. Khujakulov, R. (2025). The silent majority: Analyzing the profile of "passive" EFL learners. *Luchshiye Intellektual'nyye Issledovaniya*, 59(3), 379-381.

16. Khujakulov, R. (2026). Semantic transformations of Arabic-origin medical lexemes in "The Canon of Medicine": A case study of Uzbek folk medicine and English equivalents. *Asian Journal of Medical Sciences and Clinical Research*, 1(1), 42-48.

17. Mannanov B (2020) Uzbek medical terminology: historical stratification and modern standardization. *Til va Adabiyot* 3:12–24

18. Moerman DE (1998) Native American Ethnobotany. Timber Press, Portland, OR

19. Norri J (2016) Dictionary of Medical Vocabulary in English, 1375–1550. Routledge, London

20. Onysko A, Michel S (2010) Cognitive Perspectives on Word Formation. Mouton de Gruyter, Berlin

21. Plag I (2003) Word-Formation in English. Cambridge University Press, Cambridge

22. Shodmonov N (2018) Uzbek tili morfologiyasi. Fan nashriyoti, Toshkent

23. Tursunov, G. B., Nematov, B. M., Mamayoqubova, S. O., & Khujakulov, R. I. (2021). The Esland EFL in the world today. *Academicia: An International Multidisciplinary Research Journal*, 11(6).

24. Umarov SZ, Mirzaev JR (2021) Medicinal plant resources of Uzbekistan: current status and phytomedicine perspectives. *J Ethnopharmacol* 265:113277

25. WHO (2019) WHO Global Report on Traditional and Complementary Medicine 2019. World Health Organization, Geneva