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Toward a Multimodal English Repository for Medicine-Food Homology Concepts

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Abstract: "Medicine-Food Homology" serves as a fundamental cultural carrier for the international dissemination of traditional Chinese medicine (TCM) and the global expansion of the health industry. Currently, the external communication of core concepts related to medicine-food homology in China faces significant challenges, including semantic misinterpretation, loss of cultural connotations, and reliance on a single mode of expression. The text-only translation model fails to convey the professional attributes and cultural values of these concepts, resulting in cognitive barriers, a lack of standardized expression, and fragmented communication in international dissemination. These issues hinder the accurate global transmission of TCM culture. To address these challenges and standardize the international expression system for medicine-food homology concepts, this study draws on multimodal discourse analysis theory to establish principles for constructing a multimodal English expression repository for the core concepts of medicine-food homology. Furthermore, several construction strategies are proposed, primarily focusing on terminology standardization and content quality improvement. These strategies aim to unify international expression standards for core medicine-food homology concepts, enrich the linguistic resource system for TCM internationalization, and support TCM academic exchanges, international cultural communication, and the cross-border development of the health industry. This research holds significant theoretical value and practical implications for enhancing the international influence of traditional Chinese wellness culture and promoting the standardized, systematic, and sustainable international development of TCM.

Keywords: Core concepts of medicine-food homology; Establishment of a multimodal English expression repository; Countermeasures

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1. Introduction

"Medicine-Food Homology" is a fundamental concept in traditional Chinese medicine (TCM) culture, originating from classical medical texts such as the Huangdi Neijing (The Yellow Emperor's Inner Canon). Its central tenet is that natural substances possess both nutritional and edible properties as well as non-

toxic medicinal regulatory effects. This concept embodies the wisdom of TCM in prevention and dietary wellness and serves as a core cultural intellectual property for the internationalization of TCM and the global expansion of the health industry. In the context of the international dissemination of TCM culture, academic exchanges in global wellness, and the cross-border development of the food industry, accurate and standardized English terminology has become essential for overcoming cultural export barriers and achieving international consensus on these concepts.

Currently, the English translation system for medicine-food homology in China remains incomplete, characterized by issues such as inconsistent translations of core concepts and semantic inaccuracies. Existing academic translations are heterogeneous and primarily limited to single-mode text translation, overlooking the essential holistic perspective of Traditional Chinese Medicine (TCM) and its dialectical dietary therapy. They lack multidimensional adaptations for academic research, industrial applications, and cultural communication, which impedes the effective dissemination of TCM's cultural essence. Multimodal linguistics, which integrates multiple dimensions of expression—including text, semantics, context, and application paradigms—offers a novel approach to standardizing the English translation of traditional TCM concepts. Therefore, it is essential to focus on the core concepts of medicine-food homology, compile authoritative definitions from classical texts, academic translations, and contextually relevant application sentence patterns, and develop a systematic multimodal English expression repository.

2. Principles for a multimodal English repository of medicine-food homology concepts

2.1. Principle of unity between systematicity and hierarchical structure

The system of core concepts in medicine-food homology is extensive, clearly hierarchical, and multidimensional, encompassing several categories such as basic theories, ingredients, efficacy, applications, and practical guidelines. These concepts are logically connected through subordination, coordination, and progression. Simultaneously, multimodal English expression incorporates multiple elements, including terminology, definitions, sentence structures, contexts, cultural notes, and examples, each of which is interrelated and serves a specific function. Therefore, when constructing a multimodal English expression repository for the core concepts of medicine-food homology, it is essential to adhere to the principle of unity between systematic organization and hierarchical structure to ensure the overall system is comprehensive, logically coherent, and that classification is clear and orderly.

The principle of systematicity requires that the repository establish a comprehensive, closed-loop content system that achieves full coverage of core concepts and complete adaptation of expression modes. At the conceptual level, all core concepts related to medicine-food homology theories, ingredients, efficacy, and methods should be thoroughly included, avoiding any omissions or gaps in the system. At the modal support level, each core concept should be paired with comprehensive modal content, including standardized terminology, precise semantic definitions, and diverse sentence patterns across multiple contexts, ensuring complete expression for each concept. At the systemic logic level, the overall structure of the repository should follow the logical framework of "theoretical concepts → entity concepts → applied concepts", with each component interconnected and mutually supportive, thereby forming a complete multimodal English expression system for medicine-food homology.

The principle of hierarchical structure requires that concepts, modes, and application contexts be refined and organized in a layered manner. In concept stratification, all core concepts are divided into primary core concepts, secondary subdivisions, and tertiary derived concepts. For example, the primary concept "medicine-food homology" can include secondary concepts such as "medicinal and edible ingredients" and "dialectical dietary therapy", as well as tertiary concepts like "ingredient compatibility contraindications" and "seasonal dietary therapeutic methods", which are further refined layer by layer. In modal stratification, the repository should follow a "basic mode → advanced mode → applied mode" hierarchy: the basic mode comprises standardized core terminology; the advanced mode includes semantic definitions and cultural annotations; and the applied mode contains contextualized sentence patterns and application examples. In context stratification, appropriate contexts are categorized according to levels such as academic research, cultural popularization, and international exchange, ensuring that content at each level precisely corresponds to different application needs.

2.2. Principle of unity between cultural specificity and universal accessibility

The core concepts of medicine-food homology are vital carriers of China's rich traditional culture, embodying unique Eastern philosophical ideas and wellness wisdom, such as the holistic perspective of TCM, the unity of heaven and humanity, and the balance of yin and yang. These concepts possess distinct cultural attributes. Simultaneously, as an international lingua franca, English expressions must adapt to the cognitive habits, linguistic systems, and cultural contexts of a global audience to ensure universal accessibility and clear interpretation. Therefore, when constructing a multimodal English expression repository for the core concepts of medicine-food homology, it is essential to adhere to the principle of balancing cultural specificity with universal accessibility, achieving an effective two-way transmission between the accurate conveyance of cultural essence and the comprehension of an international audience.

The principle of cultural specificity requires that the construction of the repository preserve the authenticity of the culture by fully retaining the core cultural connotations and traditional heritage of medicine-food homology concepts. For culturally unique ideas such as the "unity of heaven and humanity", "dialectical dietary therapy", and "harmonization of yin and yang", which are highly characteristic of Chinese culture, supplementary multimodal explanations should be provided. Based on standardized translation, additional content—such as cultural background annotations, interpretations of theoretical connotations, and comparisons between Chinese and foreign wellness philosophies—should be included to accurately convey the Eastern philosophical thinking and traditional wellness wisdom underlying these concepts. This approach will promote the international dissemination of China's rich traditional culture while safeguarding its cultural subjectivity and uniqueness.

The principle of universal accessibility requires that the English expressions in the repository conform to international standards and general cognitive logic. While preserving cultural authenticity, the repository should employ internationally accepted academic vocabulary, clear sentence structures, and universally comprehensible explanatory logic to reduce cognitive barriers. To address semantic gaps arising from cultural differences between China and the West, a multimodal approach combining "literal translation + free translation + annotation" should be used, preserving the cultural core while adapting to general international cognitive habits.

2.3. Principle of unity between theoretical rigor and practical applicability

This is the final principle to be followed in constructing a multimodal English expression repository for the core concepts of medicine-food homology. It demands not only a high level of academic rigor and theoretical depth but also practical feasibility and applicability.

The principle of theoretical rigor mandates that the construction of the repository be grounded in a well-established academic theoretical framework, supported by sound theory and scholarly value. The overall construction framework should be based on multimodal discourse analysis theory, cross-cultural communication theory, terminology translation theory, and TCM linguistics theory. All expression paradigms, classification logic, and construction standards must adhere to academic theoretical norms to ensure rigorous scholarly reasoning. Additionally, by systematically organizing the English translation patterns of medicine-food homology concepts, multimodal adaptation logic, and cross-cultural communication pathways, the repository can enrich the research framework of TCM international language studies, enhance multimodal language application scenarios, and provide valuable theoretical references for related academic research.

The principle of practical applicability requires that the repository be developed based on practical needs, focusing on current challenges in international communication, academic exchange, and industrial development related to medicine-food homology culture. Content design should align with real-world application scenarios and be actionable. For academic contexts, the repository should provide standardized terminology, academic sentence structures, and paper expression templates. For teaching purposes, it should offer standardized knowledge representations and example sentences for instruction. Additionally, the repository must feature clear classification and convenient retrieval methods to fully meet the diverse needs of various users and scenarios, thereby ensuring high practical value.

Theoretical rigor offers essential academic support and innovative advancement for the development of the repository, while practical applicability imparts implementation value and operational vitality. The integration of both ensures that practical content is grounded in solid theory and that the repository embodies both academic innovation and practical utility.

3. Countermeasures for establishing a multimodal English repository of medicine-food homology concepts

3.1. Countermeasures for terminology standardization governance

The establishment of governance measures for terminology standardization addresses the root cause of inconsistent translations and strengthens the foundation for building the repository's content.

First, an authoritative priority anchoring mechanism should be implemented in order to achieve the unique standardization of core terms. This mechanism requires that translations be aligned with the official translations issued by the China National Committee for Terminology in Science and Technology, the National Administration of Traditional Chinese Medicine, and the ISO international standards for TCM. The nationally and internationally recognized standards are adopted as the sole benchmark translations for core terms.

For those medicine-food homology concepts that lack official unified translations, a multi-source corpus comparison and selection mechanism should be established. This mechanism systematically integrates high-frequency translations from key domestic and international academic journals, authoritative monographs, and mainstream foreign-language communication platforms. The optimal standard translation is determined

by statistically analyzing the transmission frequency and by verifying the professional suitability of each candidate [1].

Concurrently, a terminology rights confirmation ledger should be established. This ledger annotates each core standard translation with its authoritative source, its scope of application, and its verification basis. The purpose of this measure is to ensure that all terms are traceable and verifiable.

Second, a differentiated hierarchical translation system should be established so that the semantic boundaries between similar concepts can be clarified.

The medicine-food homology system includes numerous characteristic concepts that have similar meanings but subtle differences in their professional connotations. Therefore, a hierarchical and categorical translation governance mechanism should be developed. This mechanism is designed to classify similar terms on the basis of their conceptual attributes, their professional efficacy, and their application scenarios.

The semantic boundaries, applicable contexts, and professional orientations of different terms are precisely defined. In doing so, the nuanced characteristics of TCM professional subdivisions can be reflected through differentiated English translation schemes [2].

Additionally, a dedicated terminology analysis module should be established. This module is intended to compare the translation differences and the conceptual distinctions between similar terms. The establishment of this module addresses the current gap in the English translation differentiation of subdivided TCM terminology and enhances the professional precision of the repository.

3.2. Countermeasures for improving content quality

The core competitiveness of a multimodal expression repository lies in the professionalism and cultural richness of its content. Currently, some similar resources prioritize linguistic form over professional substance, resulting in superficial content and cultural erosion. To address this shortcoming, content quality must be enhanced across multiple dimensions to ensure the accurate transmission of TCM's professional concepts and traditional Chinese wellness culture.

First, a multi-layered, three-dimensional semantic interpretation system should be established in order to overcome the limitations of single definitions. In order to address the cognitive needs of diverse audiences, a four-tier interpretation framework is constructed. This framework consists of the following four levels: basic popular interpretation, professional academic interpretation, context-specific interpretation, and cross-cultural comparative interpretation. The basic interpretation is designed for general overseas audiences. Its purpose is to simplify professional terminology and to directly convey the surface meaning of concepts. The academic interpretation strictly adheres to authoritative classics such as the Huangdi Neijing and Bencao Gangmu (Compendium of Materia Medica), as well as to standard TCM textbooks. This interpretation accurately explains the TCM theoretical core and the wellness mechanisms of TCM concepts. The context-specific interpretation defines the exclusive interpretive boundaries of concepts in academic research, industrial promotion, and dietary therapy applications. The cross-cultural comparative interpretation integrates Western nutrition and modern medical concepts. It compares the differences in wellness cognition between China and the West. The goal of this level is to achieve a comprehensive and in-depth semantic interpretation [3].

Second, a multi-level content review mechanism should be established so that the accuracy of the content can be rigorously ensured. Specifically, a cross-review system involving three types of experts is implemented. This system includes TCM experts to assess professional accuracy, translation experts to

evaluate linguistic quality, and communication experts to review contextual appropriateness.

TCM experts verify the scientific accuracy of concept definitions, medicinal properties, efficacy, and wellness principles. Translation experts focus on refining the professionalism of English sentence structures, terminology standards, grammatical logic, and expression styles. Cross-cultural communication experts assess the appropriateness of cultural interpretations, contextual adaptations, and external expressions. The function of this expert review is to prevent content deviations and to ensure the rigor and authority of all repository content.

3.3. Countermeasures for optimizing multimodal integration

As the core feature of a multimodal expression repository, the following countermeasures must be implemented to achieve synergistic integration of multi-dimensional expression resources and to create a distinctive, highly applicable expression system.

Firstly, it is essential to foster profound multimodal integration to realize complementarity and interconnections among various modules. This involves constructing a cohesive system wherein different modes mutually validate, augment, and interact in an organic manner. Core expressions are anchored by standardized terminology; layered interpretations serve to enhance conceptual comprehension; cultural annotations offer deeper contextual insights; and contextual examples situate the application within practical scenarios. To address the diverse attributes of concepts, differentiated modal proportions should be implemented: for theoretical and cultural concepts, emphasis should be placed on cultural origins, philosophical interpretations, and cross-cultural comparative modes, while minimizing reliance on simplistic application examples [4]. Conversely, for practical concepts related to ingredients and efficacy, priority should be given to contextual examples, contraindications, and error analysis modes, with a reduction in superficial cultural interpretations, thereby mitigating issues of content homogenization.

Secondly, it is imperative to refine context-specific adaptations to enable precise and effective application. Drawing upon the varied scenarios encountered in international communication concerning medicine-food homology culture, distinct expression paradigms should be developed, each tailored to one of five core application contexts. In academic research, the use of rigorous and standardized academic English is required, suitable for journal publications, international conferences, and research projects, with an emphasis on professionalism and accuracy. For cultural popularization, language should be vivid and accessible, appropriate for dissemination via overseas new media platforms and popular science publications. Within industrial and commercial contexts, terminology, product descriptions, and brand promotion language must be carefully refined to suit cross-border e-commerce and overseas market expansion. In educational settings, the compilation of standardized example sentences and common error cases is necessary to support international talent development. Finally, for official exchanges, formal and appropriate expression paradigms should be adopted, tailored to international exhibitions, with a dedicated paradigm for each scenario.

3.4. Countermeasures for digital and intelligent empowerment

Digitalization and intelligence are essential for the long-term operation and utilization of a multimodal expression repository. To address issues such as simplistic architecture and limited functionality in existing similar corpora, the following specific implementation strategies are proposed from multiple perspectives to develop an intelligent, modern language resource platform.

Initially, it is imperative to optimize the hierarchical data architecture to establish a systematic classification of resources. This involves enhancing the existing three-tier framework—comprising the master

repository, sub-repositories, and sub-modules—by refining five principal sub-repositories: theoretical concepts, ingredient entities, wellness efficacy, dietary therapy methods, and wellness principles. Each sub-repository should encompass modules such as standardized terminology, multi-layered interpretations, and cultural elucidations, thereby ensuring that all multimodal resources are systematically classified, archived, logically organized, and readily accessible. Furthermore, standardizing format specifications and the annotation system throughout the entire repository is essential to address the prevalent issues of disorder and disorganization characteristic of traditional resource repositories, ultimately improving the integrity of the database.

Subsequently, it is necessary to advance intelligent application functionalities to enhance the effectiveness of user services. Grounded in practical and user-centric requirements, multiple intelligent features should be improved to transcend the limitations inherent in conventional static corpora. Enhancements to keyword search capabilities (in both Chinese and English), categorical search, contextual search, and fuzzy search functions will facilitate rapid resource retrieval and precise localization. Additionally, the introduction of contextual intelligent matching functions can recommend optimal expression paradigms tailored to the user's selected application scenarios. The system's capacity for batch resource export, selective excerpting, and format conversion should also be augmented to meet diverse demands, including academic writing, lesson preparation, copywriting, and industrial promotion.

In conclusion, the development of a multimodal English expression repository for the core concepts of medicine-food homology addresses existing deficiencies within the linguistic infrastructure supporting the internationalization of Traditional Chinese Medicine (TCM). This repository will promote academic exchange in TCM and serve as a vital resource for cultivating international TCM professionals. Future efforts should prioritize the continuous refinement of construction methodologies for the multimodal English expression repository, regular updates to database content, enrichment of diverse communication modalities, enhancement of the international expression system for medicine-food homology, and the promotion of accurate and sustained global dissemination of traditional Chinese wellness culture.

Disclosure statement

The author declares no conflict of interest.

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