

DOCTORAL THESIS

A Material Evidence Base for Investigating the Evolution of Chinese Medicinal Varieties and Cross-cultural Exchange

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ABSTRACT

Relevance: Many Chinese medicinal materials (CMMs) have changed over centuries of use, particularly in terms of their botanical identity and processing methods. In some cases, these changes have important implications for safety and efficacy in modern clinical practice. As most previous research has focused on clarifying the evolution of CMMs by analyzing traditional Chinese materia medica (“*bencao*”) literature, assessments of historical collections are needed to validate these conclusions with material evidence.

Aim of the study: Historical collections of Chinese medicines reveal the market materials in circulation at a given moment in time, and represent an underexploited resource for analyzing the evolution of Chinese herbal medicines. This study compares specimens from rare collections of CMMs with contemporary market materials. By highlighting examples of changes in botanical identity and processing that remain relevant for safe clinical practice in the modern era, this work aims to stimulate further research into previously unexplored historical collections of Chinese medicines.

Materials and Methods: Three groups of herbal specimens were investigated from pre-modern collections of CMMs; these specimen groups are divided into separate chapters in the thesis presented here. The historical specimens researched here are stored in the UK in the Economic Botany Collections (EBC) of Royal Botanic Gardens Kew and in the Kam Wah Chung Museum in John Day, Oregon. The specimens were morphologically examined, photographed, and compared to authentic CMMs stored at the Bank of China (Hong Kong) Chinese Medicines Center at Hong Kong Baptist

University, as well as authentic herbarium-vouchered specimens from the Leon Collection (LC) at the Kew EBC. Case studies were selected to illustrate examples of historical changes in botanical identity, used plant parts, and processing methods.

In the first group, 620 specimens of CMMs that were collected from Chinese pharmacies in the Malay peninsula in the 1920s were examined macroscopically and compared with current pharmacopoeia specifications and authentic contemporary samples. In the second group, three commonly used Chinese medicines that have a history of substitution with materials from the Aristolochiaceae family were investigated. In the third group, over 200 herbal specimens from a Gold Rush Era collection stored in John Day, Oregon were assessed.

Results: This investigation confirmed that confusion due to shared common names and regional variations in the botanical identity of certain CMMs has been a persistent issue over time. Additionally, historical changes in processing methods and the plant parts used were observed for some CMMs. In some cases, these changes have direct implications for the safe clinical practice of Chinese medicine.

Conclusions: This preliminary assessment illustrated the significant potential of collections for clarifying historical changes in CMMs. More research is needed to investigate pre-modern collections of CMMs, including a more comprehensive assessment of the holdings in the Kew EBC and other European collections that have not yet been explored from the perspective of Chinese medicine.

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