

DOCTORAL THESIS

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

Brand, Eric Joseph

Date of Award:
2017

[Link to publication](#)

General rights

Copyright and intellectual property rights for the publications made accessible in HKBU Scholars are retained by the authors and/or other copyright owners. In addition to the restrictions prescribed by the Copyright Ordinance of Hong Kong, all users and readers must also observe the following terms of use:

- Users may download and print one copy of any publication from HKBU Scholars for the purpose of private study or research
- Users cannot further distribute the material or use it for any profit-making activity or commercial gain
- To share publications in HKBU Scholars with others, users are welcome to freely distribute the permanent URL assigned to the publication

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.

Table of Contents

Declaration	i
Abstract.....	ii
Acknowledgements	iv
List of Tables and Appendices	1
Chapter One: Introduction	2
1. Previous research on historical collections of CMMs	3
2. Historical collections of CMMs in the West.....	4
2.1. The Hooper Collection (HC) at Kew	5
2.2. Historical specimens in the Kew EBC organized by species.....	5
Table 1: CMM Holdings in the Kew Economic Botany Collection, London.....	6
2.3. CMMs stored in the Natural History Museum in London.....	6
2.4. CMMs stored at the Kam Wah Chung Museum in John Day, Oregon	7
2.5. Additional Western collections of CMMs.....	7
3. Methodology and Background.....	8
3.1. Methodological limitations	9
 Chapter Two: The Hooper Collection: A source of material evidence for exploring historical changes in Chinese medicinal materials.....	 12
1. Introduction.....	12
2. Materials and Methods.....	13
3. Results and Discussion.....	15
3.1. Case studies of commonly confused CMMs.....	15
Table 1: Chinese medicinal materials with customary regional substitutes in the HC	17
Table 2: Commonly confused CMMs with known safety concerns	23
3.2. Changes in medicinal plant parts used.....	24

3.3. Case studies of specimens subjected to medicinal processing (<i>pao zhi</i>)	27
3.4. Future avenues for research	30
4. Conclusion	33
Chapter Three: Historical collections of Chinese medicines: A resource for clarifying the prevalence of substitutes from the plant family <i>Aristolochiaceae</i> in the pre-modern era	35
1. Introduction.....	35
1.1 Historical changes in the species used as “ <i>mutong</i> ” in Chinese medicine.....	36
1.2. Historical changes in the plant parts used for asarum (<i>xixin</i>) in Chinese medicine.....	39
1.3. Historical changes in the species used as “ <i>fangji</i> ” in Chinese medicine	40
2. Materials and Methods.....	41
2.1. <i>Mutong</i> -related specimens	42
2.2. Asarum (<i>xixin</i>) specimens	43
2.3 <i>Fangji</i> -related specimens	43
3. Results and Discussion.....	44
3.1 Clarifying historical changes in the botanical identity of <i>mutong</i>	45
Table 3: <i>Mutong</i> -related CMMs observed in the Kew EBC.....	49
3.2. Clarifying the plant parts used in specimens labeled as <i>Asarum sieboldii</i> Miq. in the EBC	51
3.3. Clarifying the botanical identity of <i>fangji</i> materials in historical collections.....	56
4. Conclusion	57
Chapter 4: Easily Confused Chinese Medicines in the Kam Wah Chung Collection.....	59
1. Introduction.....	59
2. Materials and Methods.....	61
3. Results and Discussion.....	62
Easily confused Chinese medicines in the Kam Wah Chung Collection.....	62
Case studies related to medicinal processing	70
Conclusion	73
Concluding Remarks	75
Appendix 1: Specimens investigated in the HC of the Kew Economic Botany Collection .	76

Appendix 2: Materials in the HC that were identified by macroscopic identification.....103

References:..... 121

Curriculum Vitae..... 127