Fragrance from the periphery and beyond: Mapping the origins of foreign spices in Chinese *materia medica*

Gábor Parti [1] , Chu-Ren Huang [2]
[1, 2] Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University, Hong Kong SAR

BACKGROUND

Chinese herbal medicine operates with thousands of materials. In most cases, traditional medicine systems use locally available ingredients. However, due to the practicality of dried plant-matter regarding storage and trade, the Chinese sourced foreign substances with distant origins early on. Among the myriad of desiccated pieces of vegetation, there is a category representing aromatic plants that today we would refer to as spices. Spices and incense were valued for their fragrant and pungent properties, as well as their healing effects. Many items of the spice domain originate in faraway lands and were introduced to the Chinese medicine cabinet hundreds of years ago. Exotic *materia medica* were systematically recorded in the *bencao* literature, as early as the legendary compendium *Shennon Bencao Jing*[1] 神農本草經 [Shennong's Compendium of Materia Medica] from around 220 AD, or the 4th century Nanfang Caomu Zhuang[2] 南方草木狀 [Plants of the Southern Regions].

MATERIALS AND METHODS

Following the trail of spices with the help of historic documents on medicine and trade, we can gather information on how and from where these substances arrived to China, and supported with modern botanical and geographical knowledge we can map their diffusion and journey along land and sea routes, such as the early Silk Road, where trade in aromatics was small in volume or the later Maritime Silk Road, where the bulk of the spice trade were conducted.

In this study, I used geospatial visualization to plot the approximate geographical origins of extra-Chinese medicinal plants from the spice domain. As a first step, I have assembled a dataset using a botanical database[3], collating it with a Chinese herbal medicine database[4], verified it against a handbook of spices[5], and augmented it with historical data from botanical giant Hu Shiu-Ying[6]. Then, I have used the plotly graphing library of Python (https://plotly.com/) to create an interactive map showcasing the information outlined above.

RESULTS

The result is a powerful, interactive geospatial scatterplot illustrated as static image in Fig. 1. For the full version please visit the visualization webpage at https://github.com/partigabor/botanical-symposium-2022. The plot helps us examine the aromatic materials that came from Southeast Asia, Central Asia, Africa, the Middle East, the Mediterranean, and even South America. Colour represents various plant families, size shows the number of regions a plant is native to. The globe can be rotated, zoomed in and out, and hovering over a datapoint tells more information about a particular item, such as their binomial name, region of origin, their name in Chinese, and the year they have been recorded in Chinese medicinal texts.

Figure 1. Approximate origins of exotic Chinese *materia medica*. Visit online.

CONCLUSION

The map shows a very clear pattern of West-East trade in spices and incense. The most prominent areas that supplied aromatic medicinal plant materials are the tropical regions of South and Southeast Asia, but the more temperate Mediterranean and the Middle East were abundant sources as well. To conclude our observations, it is interesting to note that many of the most important spices used in TCM were once foreign items introduced via due to long distance trade.

REFERENCES

1. Yang, S. *The Divine Farmer's Materia Medica: A Translation of the Shen Nong Ben Cao Jing*; Blue Poppy Press, Inc.: Boulder, CO, 1998.
2. Ji, H. *Nan-Fang Ts'ao-Mu Chuang: A Fourth Century Flora of Southeast Asia*; Chinese University Press: Hong Kong, 1979.
3. POWO. *Plants of the World Online*, Botanical Database.; Royal Botanic Gardens, Kew: 2022. https://powo.science.kew.org/
4. PolyU. *Chinese Herbal Medicine Database*. School of Nursing: 2022. https://herbaltcm.sn.polyu.edu.hk/herbal/
5. van Wyk, B.-E. *Culinary Herbs and Spices of the World*; University of Chicago Press, joint publication with the Royal Botanic Gardens, Kew: Chicago, 2014. https://doi.org/10.7208/chicago/9780226091839.001.0001.
6. Hu, S.-Y. History of the Introduction of Exotic Elements into Traditional Chinese Medicine. *J. Arnold Arbor.* **1990**, *71* (4):487–526. https://doi.org/10.5962/p.184537.

ACKNOWLEDGEMENT

This work is related to the Ph.D. dissertation currently prepared at the Department of Chinese and Bilingual Studies (CBS), at PolyU, titled *Mapping the Language of Spices: A Corpus-Based Philological Study on the Words of the Spice Domain.*