

# The Changing Qualities of Chinese Herbal Medicines

## Abstract

In Chinese, the character 性 *xing* represents the complete character of a substance, which is not synonymous with plant name, genus, species or previously documented medicinal action or indication. Rather, 性 *xing* is the totality of what an individual herb actually is and therefore does in a patient's body at the moment of its use. It is important to recognise that the 性 *xing* of a natural substance is not static, but changes through location and climate, and continues to shift as a plant dries, ages, becomes mouldy, loses essential oils due to storage, is ground into powder, prepared into pills, steeped for minutes or cooked for hours. This article explores these aspects of Chinese herbal medicines, particularly in relation to clinical practice.

## Introduction

The Bordeaux summer of 1990 was the hottest and driest of the century, until a September storm drenched the region with rain. Precipitation at the perfect moment, combined with warm temperatures and sunlight, increased the sugars in the grapes ripening on the vine. The resulting 1990 vintage Bordeaux wine is considered among the best wines of the century, receiving ratings of 90 to 98 out of 100,<sup>1</sup> and selling for more than a thousand pounds per bottle today. However, a severe frost the following spring affected quality to such an extent that the 1991 vintage received a 59/100 rating, followed by dismal products for 1992 and 1993 as well.

With the staggering sums invested in viticulture, great care is taken to maintain the growing environment and blending of the grapes, as well as regulate the storage conditions of the resulting wine. However, as the early 90s in Bordeaux illustrates, the reality is that each vintage is, at best, slightly different. With this inherent fluctuation from season to season, experts and consumers rely on vintage ratings to evaluate quality. These ratings can only be done by tasting and inspecting each year's wine, and are modified as wines improve or decline over time. This shows us that the finished product is never static, but continues to change until the moment a wine is consumed. This variability is accepted as an intrinsic part of the wine industry by vintners and consumers alike.

The majority of Chinese medicines are plants and just as subject to annual and seasonal differences as grapes. However, practitioners of Chinese herbal

medicine do not benefit from a panel of experts who inspect, monitor, taste and rate the quality of the final product. At best, herbs are classified as premium or conventional grade substances.<sup>2</sup> Premium substances are lab-tested to confirm that they do not contain pesticides, mineral or microbial contaminants or other adulterants, and infers that they will do what is expected in the clinical setting. Conventional grade medicinals are not guaranteed to be free of adulterants; however, even lower grade commercial substances are expected to be clinically effective.

While the safety of herbs is extremely important and rigorous testing should be the norm, practitioners should not expect specific medicinal effects based on current grading methods alone. The herb grading system does not take into account where and how the crop was cultivated or any climate-related factors. In Chinese medicine clinics today, we receive batches of herbs from various locations that have been subject to diverse approaches to harvesting and processing, and yet we expect herbs to consistently act in the pre-described ways recorded in our *materia medica*s. Thus we expect Dan Shen (*Salviae Miltiorrhizae Radix*) to invigorate blood and cool heat, and we expect Dang Gui (*Angelicae sinensis Radix*) to tonify blood and moisten the intestines, with no thought as to whether the particular Dan Shen or Dang Gui available in our clinics will actually have these effects. This seems absurd given that herbs are living, growing, variable substances like the grapes mentioned above. No matter how ethical, organic, geo-authentic or GMP (Good Manufacturing Practice)-compliant our source is, farming is never immune to the influence of nature.

By: JulieAnn Nugent-Head

Keywords: Chinese medicine, herbal medicine, herb quality 性, *xing*

In reality, each herb has a quality - 性 *xing* - defined by the factors that influence it from the moment of its 'birth' to its final use. Only by investigating the actual substance on hand in our clinic can we accurately discern its clinical application. Thus herbalists should not expect medicinal substances to possess fixed medical actions based on actions or indications listed in books and that can be relied upon as immutable facts.

*Each herb has a quality - 性 *xing* - defined by the factors that influence it from the moment of its 'birth' to its final use.*

### The changing qualities of herbs through history

While not explicit in modern texts, which tend to document herbs with a static flavour/nature, scholars have been writing about the changing qualities of herbs - and thus their different clinical applications - since the origins of Chinese herbal practice. For example, Ren Shen (Ginseng Radix) was originally documented as a sweet and mildly cold herb in the *Shen Nong Ben Cao* (*Divine Farmer's Materia Medica*), which suggested its clinical applications accordingly:

人參：氣味甘微寒，無毒。主補五藏，安精神，定魂魄，止驚悸，除邪氣，明目，開心，益智。久服輕身延年。  
Ren Shen, flavour nature sweet mildly cold without toxicity. Governs building the five zang, calming the jing-shen, anchoring hun and po [spirits], stopping fright, expelling pernicious qi, brightens the eyes, opens the Heart, benefits wisdom. Long term use lightens the body and extends the years.

In contrast, the *Ming Yi Bie Lu* (Appendant Records of Famous Physicians) written by Tao Hong Jing in the 500s lists Ren Shen as a warm herb and thus suggests different clinical applications:

人參微溫，無毒。主治腸胃中冷，心腹鼓痛，胸脇逆滿，霍亂吐逆，調中，止消渴通血脈  
破堅積，令人不忘。  
Ren Shen mildly warm, without toxicity. Governs treating cold in the intestines and stomach, pain in heart to abdomen, fullness and rebellious qi in the chest and flanks, cholera and vomiting, regulates the middle, stops wasting and thirsting disorder courses the vessels, breaks hard accumulations, helps people to not be forgetful.

### Documentation of variation in quality and clinical application

The majority of the herbs documented in the encyclopaedic *Ben Cao Gang Mu* (*Materia Medica Compendium*, compiled by

Li Shi Zhen in 1596) are described in a staggeringly diverse number of ways. However, these discrepancies should not be interpreted as proof that Chinese medicine is based on a faulty theory that requires clarification by modern research and explanatory models. It is also not correct to interpret the varied comments as representing disagreement between great scholars. On the contrary, because every scholar-doctor was examining substances through tasting, touching, smelling, brewing, prescribing and observing, all of the comments might be considered correct and a direct reflection of the actual plants each scholar was working with at any specific moment in time.

These varied commentaries can be clinically invaluable if they are read in the correct context; however, this context is rarely made explicit. The *Xin Xiu Ben Cao* (*Newly Revised Materia Medica*) for example, includes the actions and indications of Ren Shen from both the *Shen Nong Ben Cao* and the *Ming Yi Bie Lu*, but does not acknowledge that one book stated that Ren Shen is cold while the other stated it is warm. The confusion resulting from this oversight continues today, as modern materia medicas list Ren Shen as a warm, sweet and mildly bitter herb with actions such as building the yuan qi and tonifying the qi of the Spleen, Stomach and Lungs (the effects of a warm herb), as well as benefiting Heart qi, calming the spirit, nourishing fluids and relieving thirst (the effects of a cold, sweet herb).

Qing Dynasty doctor Chen Xiu Yuan is famous for pointing out inconsistencies and misinterpretations, and writes about Ren Shen in his commentary on the *Shen Nong Ben Cao*:

陳修園曰：本經止此三十七字，其提綱云：「主補五藏」，以五藏屬陰也。精神不安，魂魄不定，驚悸不止，目不明，心智不足，皆陰虛為亢陽所擾也。今五藏得甘寒之助，則有安之定之止之明之開之益之之效矣。曰邪氣者，非指外邪而言，乃陰虛而壯火食氣，火即邪氣也，今五藏得甘寒之助，則邪氣除矣。余細味經文，無一字言及溫補回陽，故仲景於汗吐下陰傷之症，用之以救津液。

The original classic [*Shen Nong Ben Cao*] stops at these thirty seven characters. It states, '[Ren Shen] governs building the five zang'. [This is because] the five zang are classified as yin. Jing-shen that is not calm, hun and po not grounded/anchored, shaking/palpitations that do not cease, eyes that are not bright, heart wisdom not full. These are all yin deficiency harassment by excess yang [symptoms]. If the five zang are benefited by sweet and cold, there is a calming, settling, brightening, opening and benefiting action. [The *Shen Nong Ben Cao*] speaks about evil qi; this is not referring to external pernicious, this is yin deficiency and exuberant fire consuming the qi. The fire is thus the pernicious qi. When the five zang receive the benefit of sweet and cold, [this] results in the pernicious qi eliminated [resolved]. I have carefully examined the words of the classic, not one character speaks to [Ren

Shen's quality as] warm, building and returning of yang. Furthermore, in situations where sweat, vomit, or purging has damaged the yin, Zhang Zhong Jing applies this substance to rescue the fluids [jin ye].

Just as varying qualities of Ren Shen have led to confusion about its clinical application, the historical records of other herbs raise similar questions. For example, the *Shen Nong Ben Cao* states that Dang Gui is bitter and warm, and indicated for cough and upward reversal of qi, warm malaria (nue) with cold and heat and skin shivering, vaginal leaking, sores, ulcers and wounds. In contrast, the *Ming Yi Bie Lu* states that Dang Gui is acrid and greatly warm, and thus indicated for warming the middle, stopping pain and treating damp bi (blockages). Zhang Yuan Su,<sup>3</sup> on the other hand, writes that the sweet flavour of Dang Gui can harmonise the blood. These discrepancies should not be interpreted as indicating that Dang Gui can achieve each and every one of these actions simply by being included in a prescription, but rather that different harvests of Dang Gui have had these varied clinical results in the past. The flavour and nature of the specific Dang Gui varietal used in each of these situations was different, and thus the clinical applications were not the same. If a harvest of Dang Gui is remarkably bitter, it will act differently from harvests of Dang Gui that are acrid or sweet. On this subject the *Nei Jing* (Inner Classic) reminds us that '味同者，作用相同。味不同者，作用不同。' (Flavour is the same, action is similar. Flavour is not the same, action is not the same).

Differing opinions about the flavour of Tian Ma (Gastrodiae Rhizoma) have led to questions regarding its clinical effects. Zhou Xue Ting, for example In the *Ben Cao Zheng Yi* (*Rectified Meaning Materia Medica*) points out that Tian Ma is described as 'acrid and warm, governing all types of wind damp, bi syndrome, paralysis from cold qi. These [symptoms] are treated by [the action of a] warm and acrid [substance]. Yet ancient scholars state Tian Ma governs deficiency, wind, dizziness and pain in the head, [and is] able to calm the liver and stop wind. Is this not in contradiction to expelling wind, unblocking, disseminating and dispersing qi? If [Tian Ma] is [indeed] an acrid, warm, unblocking and dispersing substance, [then] using it to treat deficiencies, dizziness and pain in the head, its ascending and spreading qualities [would] cause more harm than they can help.'

Comparing the varied commentaries collected by Li Shi Zhen in the *Ben Cao Gang Mu*, Hao Gu wrote that Tian Ma is bitter and neutral, while Da Ming recorded it as sweet and harmonising, while the *Ben Cao Gang Mu* officially lists Tian Ma (under the name Chi Jian) as acrid and warm. Modern texts state that Tian Ma is sweet and neutral. Thus, Zhou Xue Ting's statement above points out how crucial it is for us to confirm the actual flavour and nature of the substances we use and thus their effects upon the body. If Tian Ma is sweet, it will build, slow and harmonise, and it will be appropriate

for deficiency headaches and dizziness. Conversely, if Tian Ma is acrid, it will disperse and create movement, and will be appropriate for unblocking, driving out wind and overcoming dampness. However, today, modern materia medica tend to list all of the aforementioned actions together which lends the reader to believe that every harvest of Tian Ma can do all of these things.

每药先辨其气味形色，次著其所入经络，乃为发明其功用，而以主治之证，具列於后，其所以主治之理，既在前功用之中，不能逐条细注读者详之。

Each herb: first differentiate its flavour and nature, form and colour; secondly the channel it enters, then [one can] expound upon its functions, and list them afterwards according to the pattern they treat. The reasons for which [the herb] treats [what it treats] are already [implied] in the functions [listed] above, they cannot be written down one by one, the readers [must] analyse them [themselves].

*If a harvest of Dang Gui is remarkably bitter, it will act differently from harvests of Dang Gui that are acrid or sweet.*

### Reasons for discrepancy in qualities

In the first chapter of the *Qian Jin Yi Fang* (Supplemental Prescriptions Worth a Thousand Pieces of Gold), Sun Si Miao states that different types of soil, water and climate produce herbs with differing qualities. Even in modern times this understanding has not been completely ignored in China. When writing a formula, more classically-minded doctors tend to specify the location of origin of the herb as being equally important as the substance itself. For example, a doctor will specifically prescribe Bei Chai Hu (Radix Bupleurum Chinensis) versus Nan Chai Hu (Radix Bupleurum Scorzonerifolium), Bei Sha Shen (Radix Adenophorae) versus Nan Sha Shen (Radix Glehniae), Hang Bai Shao (Hangzhou-sourced Paeonia Radix alba), Chuan Hou Po (Sichuan-sourced Cortex Magnolia Officinalis), Huai Shan Yao (Rhizoma Dioscoreae from a region along the Yellow River originally known as Huai Yin), etc.

### Location

Research at the Guangzhou University of Chinese Medicine in 2010 compared herb qualities documented in the *Shen Nong Ben Cao* and the *Xin Xiu Ben Cao* to identify and explain discrepancies in flavour and/or nature.<sup>4</sup> In some instances the difference in growing location were found to explain the differing flavour and nature. Da Huang (Rhei Radix et Rhizoma), for example, was described in the *Shen Nong Ben Cao* as bitter, but appears in the *Xin Xiu Ben Cao* as bitter and astringent. This can be explained as the Da Huang from Yizhou or Northern Timor is bitter, while the Da Huang sourced from Xishan is bitter and astringent.

### Varietal

In the same research, when comparing Bing Lang (Arecae Semen), documented as being acrid in the *Shen Nong Ben Cao* and as very astringent in the *Xin Xiu Ben Cao*, it was determined that these descriptions actually represent different plant varieties. A difference in plant variety also explains why the Wu Wei Zi (Schisandrae Fructus) documented as sour in the *Shen Nong Ben Cao* was described as bitter in the *Xin Xiu Ben Cao*.

Lack of awareness of these distinctions is a significant obstacle for Western practitioners, compounded perhaps by the difficulties inherent in translating from Chinese characters (full of meaning) to pin yin (void of meaning for a non-Chinese speaker), and then into English or Latin equivalents. Herbs that are not named according to their growing region cause an oversight of the relationship between plant origin and nature. Equally, herbs with Chinese names that are variety specific like Ye Ge Gen (Radix Puerariae lobatae) or Fen Ge Gen (Radix Puerariae thomsonii) can easily be incorrectly prescribed when oversimplistically documented in modern materia medica or sold by distributors as simply Ge Gen. Such oversights have even resulted in death - for instance in cases where Guang Fang Ji (Guangdong Fang Ji - Aristolochiae Fangchi Radix) has been used as a diet supplement instead of Han Fang Ji (Hanzhong Fang Ji - Stephaniae Tetrandrae Radix).<sup>5</sup> Herb safety aside, the issue of plant varieties and source location is a considerable factor in explaining the discrepancies in flavour and nature of herbs documented through history.

### Herb quality

Herb suppliers in the West carry a range of herb grades. To some extent, better quality herbs are more likely to be and do what the buyer expects. Our clinic has stopped purchasing herbs from some suppliers after receiving substandard products containing dirt, cigarette butts and hair, amongst other things, or simply being the wrong herbs, as these reflect the standards of the purveyor and thus the quality of the plants themselves.<sup>6</sup> We have found that by paying more for 'organic' and 'lab-tested' herbs, the product consistently looks better than conventional products from the same supplier. Lab-tested Dan Zhu Ye (Lophateri Herba) from one supplier, for example, comes as loose green bamboo leaves; the same supplier sells 'conventional' grade Dan Zhu Ye as bundles of dried brown matter deceptively wrapped on the outside with vibrant green bamboo leaves.

However, while one should purchase the best quality herbs one can afford, 'superior' quality does not guarantee consistent medicinal effects. This was recently emphasised in our clinic after purchasing two batches of lab-tested Wu Wei Zi. The Wu Wei Zi that we normally stock is plump and red in colour. However, one batch was black in colour, wrinkled, dry and covered with a slightly suspicious white residue. After brewing 18 grams of each batch of Wu Wei

Zi in a thermos for four hours, the red and vibrant Wu Wei Zi variety was light and pleasant in flavour, fruity in aroma, slightly sweet and sour, and warming in effect. The dark and wrinkled variety on the other hand tasted very bland and had a slightly unpleasant smell. After 12 hours of steeping, the inferior looking variety had a moderately sour taste, and was light in quality without being overwhelming, with no palpable thermal effect. However, after 12 hours the vibrant and colourful variety that we had initially preferred was so sour and intense that an 18 gram dose was unpleasantly puckering in the mouth and throat, and felt as if it would sour the stomach. Because the majority of our patients brew their herbs using this overnight 'thermos method',<sup>7</sup> we needed to reduce the dosage from 18 grams to three to six grams. In contrast, the other variety was acceptable in strength at 18 grams after 12 hours of steeping, and we would not expect it to be effective at gathering or holding the qi and fluids at only three to six grams. This is an excellent example of how tasting and directly experiencing a herbs can influence application above and beyond any decisions one may make based on description or appearance.



Two batches of lab-tested Wu Wei Zi: top - dark and wrinkled; bottom - red and plump

### Processing

Another factor that contributes to a herb's 性 *xing* is processing. In the opening lines of the *Qian Jin Yi Fang*, Sun Si Miao states that a herb must be picked at the right time and dried in the proper manner, otherwise it may not achieve its desired clinical effects. While many herbs were historically picked in the second or eighth month of the year and dried in shade, sun or wind, the scale of

the herbal medicines industry today dictates a more mechanical and year-round process. It is thus imperative that the modern practitioner understands how substances have been processed to accurately ascertain their 性 *xing* and subsequent effects upon patients.

While this is less of a problem in China where practitioners routinely prescribe herbs with designated preparation methods, the prevalence of patent medicines and concentrated powders/granules in the West make it all too easy to overlook whether a herb has been ginger-fried, alcohol-soaked, honey-fried, etc. Unfortunately, even when purchasing raw herbs it is also not uncommon for a processing method to change without full transparency to the consumer. Xiang Fu (Cyperi Rhizoma), for example - listed in the *Ben Cao Gang Mu* with salt, alcohol, vinegar and water as possible processing methods - typically arrives labelled 制香附 'Prepared Xiang Fu', without further information on how the herb was prepared. Since I had never seen a doctor specify sheng (fresh) Xiang Fu, chao (stir-fried) Xiang Fu, Jiao (blackened) Xiang Fu, Cu Zhi (vinegar-processed) Xiang Fu etc, when purchasing herbs for our pharmacy I simply stocked the only type of Xiang Fu available - 'Zhi Xiang Fu'. My experience of Xiang Fu (Cyperi Rhizoma) had always been of very small pieces of dark root. Recently, however, upon purchasing Xiang Fu we received a substance that was black on the outside with a pale colour in the middle. The Chinese writing on the package notated 醋制香附 (vinegar-processed xiang fu), although in English the label simply read 'Xiang Fu'. Because of the obvious change in appearance we contacted the supplier for more information, and learnt that previous batches of Xiang Fu had been stir-fried in sand. This method of preparation creates an even heat and penetrating dark colour, whilst maintaining a strong fragrant quality. Because the supplier was out of stock of this type, they shipped the vinegar-processed batch as a substitute without letting us know. Fortunately, we were able to immediately identify the difference by the appearance of the herb and the Chinese writing on the label. As vinegar has an astringent property that reduces the dispersing and moving qualities of this herb, understanding this change of processing method was crucial information to understanding actual clinical effects of the herb.

Every herb can be altered by processing. Gan Cao (Glycyrrhizae Radix) is typically available as unprocessed or honey-cooked; Fu Zi (Aconiti Radix lateralis) is available fresh, prepared with brine and herbs, smoked or cooked in sand; Dang Gui can be bought fresh, dry-roasted or alcohol-soaked; Du Zhong (Eucommiae Cortex) comes fresh, salt water-soaked or charred, and so on. In most cases the processing method is purposely done to alter the medicinal effect, but in other cases processing methods inadvertently alters the substance. For example, Zhu Sha (Cinnabaris) was originally considered to be a safe 'upper level' herb that one could take daily without harm. However, cooking



Two types of Xiang Fu: top - vinegar-processed; bottom - our typical variety (stir-fried in sand)

Zhu Sha transforms the minerals and can lead to mercury poisoning from consistent consumption. On this subject the *Yao Xing Lun* (Treatise on Herb Properties) states:

丹砂《本经》云无毒，本书作有大毒，故多炼治服食，鲜有不为药患者

Dan Sha [Zhu Sha]: the *Shen Nong Ben Cao* states that there is no toxicity, [but] this book states [it] has great toxicity, [this is because] today it is smelted to take as a Daoist medicine, [among those who consume it] it is rare [to find] someone who has not been injured by the medicinal.

While Zhu Sha is illegal for purchase in the West and widely believed to be a toxic medicinal, it is available in unprocessed powdered form in China, and even included in many over-the-counter (including paediatric) medicines for cases where heat has disturbed the spirit leading to convulsions or fright as well as acute trauma powders to calm the spirit and quicken healing. This example shows that although our perception in the West of Zhu Sha being a dangerous toxic herb may be accurate based on a historical change in processing, in Asia it is not processed to ensure it is a safe and valued medicinal included in many over-the-counter emergency (including paediatric) medicines.

### Researching the qualities of modern herbs

In 2011, prompted by reading through the *Ben Cao Gang Mu* and shocked at the disparate commentaries that were not reflected in abridged modern materia medicas, I focused my doctoral research at the Zhejiang University of Chinese

Medicine on examining exactly how many herbs have been documented with varied qualities (and thus varied clinical applications) through history. In order to make the research applicable to modern practice, I focused only on substances that appear in both the Chinese University and TCM schools official herb study textbooks. I found that out of the 400 herbs that appear in both the primary materia medica used in the West (Bensky et al., 1993<sup>8</sup>) and the official Chinese university herbal studies textbook (新世纪中药学, *New Century Chinese Herbal Studies*), 47.5 per cent of the substances documented through history are recorded with varied qualities. The second phase of my research aimed to identify the 'actual' flavour of herbs and compare these results to the documented flavour in modern texts. In order to ensure taste sensitivity I hired a team of experts who were 'Chinese National Level First Tier Tea Tasters' (a professional full-time job and greatly esteemed position) from the Dragon Well Green Tea Research facility in Hangzhou. These experts did not have any relationship or previous experience with Chinese herbs. Tasting herbs for the subjective experience of acrid, sweet, bitter, sour or salty flavours, the panellists were isolated from each other and asked to rate the flavour of each herb on a scale of intensity from zero to 10.

#### Flavour research results

The results of this research were that many substances were determined to have more than one flavour, following what has been documented in texts like the *Ben Cao Gang Mu*. For example, Tao Ren (Semen Pruni Persicae) was found to be both bitter and sweet, and Wu Zhu Yu (Evodiae Fructus) tasted acrid as well as bitter. Because some of the flavours were profound (i.e. obvious, intense) while other flavours were less distinct, in evaluating the results of the study we focused on the flavours that were rated at five out of ten or greater in intensity, meaning that the flavour was very noticeable and 'loud' on the palate. Among the expert panellists, there was unanimous agreement on the predominant flavour of nearly 100 per cent of the substances tasted; only two substances - Ju Hua (Chrysanthemi Flos) and Shi Gao (Gypsum fibrosum) - were found to be inconclusive, without a majority agreement on any one flavour (despite every single expert panellist recognising Ju Hua and writing 'the fragrance of Chrysanthemum' on their data sheets). The flavour of Shi Gao was so mild that panellists recorded that there was no profound flavour to report.

In comparing these results to modern texts, the major flavour reported in 59 per cent of the herbs in the study matched at least one flavour documented in the modern materia medicas. However, a surprising 37.5 per cent of herbs did not match any of the documented flavours. Twenty one herbs in particular showed considerable disagreement with modern textbook documentation, and therefore deserve further investigation. For example, Ge Gen (Puerariae Radix) is historically documented as tasting sweet and acrid, and can

therefore discharge exterior conditions, release the muscles, relieve heat, generate fluids, vent and discharge measles, raise the yang, stop diarrhoea and treat symptoms of hypertension. However, our expert panellists unanimously agreed that the varietal of Ge Gen in the study was predominantly bitter (at an intensity of seven out of ten). This is significantly different to sweet and acrid, and in actuality would create the opposite effects in the body according to the description in the *Nei Jing*: 苦能燥、能坚 (bitter flavours affect drying and solidifying).

#### The actual quality of herbs

As introduced above, the Chinese character 性 *xing* represents the complete and actual quality of a medicinal substance at a given moment, which is not necessarily synonymous with plant name, genus, species or previously documented medicinal action or indication. Rather, 性 *xing* is the totality of what the individual herb actually is and will do at the moment of its use. The 性 *xing* of any natural substance is not static but a dynamic combination of the following attributes and influences:

1. Its genetic or molecular makeup.
2. Its growing environment and the conditions of its storage.
3. The yin/yang qualities of the substance (for example light or heavy, floating or sinking, thick or thin, moist or dry).<sup>9</sup>
4. The intensity of the flavour and nature of the substance. For example, slightly sour like Bai Shao (Paeonia Radix alba) or intensely puckering like Da Fu Pi (Arecae Pericarpium); mildly warming like Mu Xiang (Aucklandiae Radix) or intensely warming like Huo Xiang (Pogostemonis Herba).<sup>10</sup>
5. The strength (potency or intensity of substance) and toxicity as outlined in the tripartite organisation of the *Shen Nong Ben Cao*.<sup>11</sup>
6. The cooking or preparation method that alters, diminishes or accentuates the inherent properties of the substance.

#### Clinical application

Because a herb will only act as its 性 *xing* - rather than a textbook - dictates, at our clinic we taste and discuss one herb per week. Our front desk also flags any major shifts in herb appearance as they receive new stock so that our practitioners can anticipate different responses from patients. When tasting herbs with our staff, we identify the qualities we experience in our mouths and discuss how the herb is likely to therefore work according to the expectations as laid out in the texts. Even with that dedicated effort, however, we are only deeply examining the actual qualities of 52 herbs per year at best, as well as those herbs that may undergo sudden changes in appearance. Thus, we also have to rely on abnormal patient reactions to flag our attention that the 性 *xing* of any herb might be different to our expectation. For example, after practitioners heard repetitive complaints that their formulations were very sweet, we brewed and examined

the newest shipment of sheng Gan Cao (*Glycyrrhizae Radix*). Sure enough, the new batch was remarkably sweet, so that we subsequently lowered the dosage from nine grams to three grams when prescribed as a secondary herb in a formula. Without receiving complaints across a broad patient base, we would not have tasted the Gan Cao until it was the 'herb of the week', because there had been no obvious change in appearance. This highlights that 'good quality' (organic, geo-authentic, vital looking, etc.) and 性 *xing* (the actual flavour and nature that will create its medicinal effect) are not the same thing. If we had wild-crafted or grown our own herbs, we would probably have noticed the seasonal changes and climatic factors that yielded an overly sweet Gan Cao or an exceptionally bitter Dang Gui. Our farm-to-pharmacy involvement would result in increased clarity in terms of selection and dosage. Furthermore, if a crop did not perform well and was no longer available, we would be forced to use a different medicinal to achieve the desired effect, resulting in more flexibility in application instead of relying on a limited number of favoured substances, and expecting them to be available all year round without variation in action or efficacy.

## Conclusion

The importance of examining each batch of herbs is not emphasised in modern herbal education. We tend to combine substances in largely theoretical terms, and are even more disconnected from their 性 *xing* if we use powders or pills that make it impossible to visually inspect a formula's constituent ingredients. While it would be preposterous for a chef to cook with ingredients that they had never tasted, it is the norm in herbal practice to memorise actions and indications from textbooks, and count on herbs to behave how they have in the past so that practitioners often prescribe (or avoid) herbs they have never personally experienced. Not only does this limit understanding and efficacy, it removes the feedback loop of direct exposure that would help practitioners understand and modify prescriptions accordingly. In food cooking, the result of such practice can be disappointing at worst, but in medicine it can be dangerous.

*JulieAnn Nugent-Head lived in China for eight years studying with the last generation of traditional practitioners who were born and educated prior to 1949. Seeing these older doctors effectively treat acute and chronic conditions in their clinics and studying the classic texts with them in their homes revolutionised her understanding of Chinese medicine. Their clinical skills and perspective were a drastic contrast to her previous training in the West. This experience encouraged JulieAnn to continue post graduate studies in the Chinese university system, focusing her doctoral thesis on the classical application of herbs. JulieAnn feels that herbs are wonderfully practical and incredibly effective, and hopes to encourage more of the TCM community to use herbs as a principle component of treatment. JulieAnn and husband Andrew moved back to the United States in 2014, and opened a teaching clinic in Asheville, NC. They teach internationally, and are vocal advocates of classically-based, clinically-focused, tangible and effective Chinese medicine.*

## References

- 1 Bordeaux region wine ratings in 1990 range from 90/100 for Leoville Baron, Lagrange, Haut Bailly and De Fargues to 97/100 for Pichon Baron, La Conseillante, Leoville Las Cases, and 98/100 for Troplong Mondot.
- 2 For example, Kamwo ([www.kamwo.com](http://www.kamwo.com)) has choices of conventional or premium grade herbs, but does not notate further information on the difference in herbal grades; Nuherbs ([www.nuherbs.com](http://www.nuherbs.com)) stocks what they call 'nuherbs herbs' or 'nuherbs lab-tested herbs'. Their product information page states: 'In addition to the premium Chinese herbs that nuherbs Co. has been distributing for over 20 years, we are proud to add nuherbs® Lab Tested Herbs, a full line of geoauthentic, preservative free, laboratory tested Chinese herbs and powders processed at a PIC/S GMP factory to our family of products' (<http://nuherbs.com/products/>).
- 3 Documented in the *Ben Cao Gang Mu*.
- 4 Xie Chao Dan & He Shi Min (2010). Re-recognition of the Five Flavours. *Guangzhou University of Chinese Medicine Periodical*, 27(6)[对中药五味的再认识 广州中医药大学学报 2010年11月第27卷第6期]
- 5 Lord, G.M., Tagore, R., Cook, T. et al. (1999). Nephropathy caused by Chinese herbs in the UK, *Lancet*, 354, pp.481 - 482. Nortier, J.L., Martinez, M.C., Schmeiser, H.H. et al. (2000). Urothelial carcinoma associated with the use of a Chinese herb (*Aristolochia fangchi*), *New England Journal of Medicine*, 342, pp.1686 - 1692
- 6 While the preferred Xi Xin varietal (*Asarum hetrotropoides*) is illegal for sale in the United States, some US suppliers sell (*Asarum forbesii*) as Xi Xin. Historically, the fine root portions of Xi Xin (*Asarum hetrotropoides*) are employed for their strongly warming and scattering properties, while the arial portions are believed to be higher in concentrations of aristolochic acid and are not used. However *Asarum forbesii*, sold as 'Xi Xin' includes the arial portion leaf and stems, and looks considerably different in appearance from the thingolden thread Xi Xin. In 2014, after seeing Xi Xin available on a supplier's website, our clinic purchased Xi Xin, and received th *Asarum forbesii* varietal also known as Du Heng, or Tu Xi Xin (rustic Xi Xin). I noted the discrepancy and contacted the company to inquire, but the supplier insisted it was the accurate plant. For more on the varieties of Xi Xin and the importance of clear identification standards see [http://paper.takungpao.com/resfile/2012-04-23/A22/A22\\_Screen.pdf](http://paper.takungpao.com/resfile/2012-04-23/A22/A22_Screen.pdf)
- 7 This 'thermos cooking method' - akin to 焖法 *men fa*, steeping-cooking in an enclosed container - allows the heavy root portions of a formula that are typically cooked first in decoction to steep for extended periods of time, while substances that are added last can be steeped separately in boiling water so that they maintain their aromatic fragrance. For more information see <<http://thealternativeclinic.org/herb-cooking-instructions/>>.
- 8 Bensky, D., Gamble, A., & Kaptchuk, T.J., (1993). *Chinese Herbal Medicine: Materia Medica*. Eastland Press: Seattle
- 9 Nugent-Head, J-A. (2016). The Yin and Yang of Herbs. *Journal of Chinese Medicine*, 111, 63-67
- 10 Nugent-Head, J-A. (2014). The Yin and Yang of Herbs. *Journal of Chinese Medicine*, 105, 30-36
- 11 Nugent-Head, J-A. (2014). The Yin and Yang of Herbs. *Journal of Chinese Medicine*, 104, 24-28