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# Testing lexical equivalences for Chinese consumers: Do hawthorns taste like blackberries?

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*Purpose:* To understand whether Chinese imported wine consumers respond to sensory descriptions using Western fruits and vegetable flavours the same way they respond to Chinese fruit and vegetable flavours.

*Design/methodology/approach*: Two-hundred sixty-three Chinese imported wine consumers were recruited across three major cities in China. They were divided into two groups. Each group tasted the same five red wines and one tawny port and ticked a series of generic wine descriptors as well as a list of specific fruit and vegetable flavours. The specific flavours were either western fruits and vegetables or suggested Chinese equivalents. Correspondence analysis was used to relate the descriptors to the six wines to test for equivalence or not.

*Findings*: The generic descriptors were linked to the same wines in both groups, showing that the groups were equivalent. Eight of the fourteen specific descriptors were linked to the same wines using the Western versus Chinese flavours showing equivalence. The other six flavours were not equivalent.

*Practical implications*: This research provides the first empirical evidence of what specific Chinese fruit and vegetable flavours are equivalent to the typical ones used on imported wines in China. The results give some direction to wine producers and distributors about what terms better fit with Chinese perceptions and are more likely to be useful in describing wines in China.

Key words: China, wine descriptors, wine flavours, correspondence analysis

## 1. Introduction and literature review

China imports 4 million hectolitres of wine for a total value of 1.58 billion US dollars, a growth of 8% and 9% respectively compared to 2011. The majority of the top 15 world wine producers expanded their exports to China in 2012 compared to 2011 (OIV, 2013). However, as a relatively new market with cultural and language issues for all imported wine producers, there is limited managerial information available and limited academic exploration of Chinese consumer behaviour to wine. Taste preferences amongst this potentially diverse market are not clear. The current available commentary rests in the domain of journalists, wine writers and, at the pinnacle of knowledge, a few Masters of Wine with an expertise in the Chinese market.

One key issue that needs investigating is the usage and impact of tasting terminology and the impact of taste descriptors on preferences. Currently, wine is most often described using the standard Western tasting terminology and the corresponding Western fruits, vegetables, spices and flavours are used to describe the smell and taste of wine. Describing a wine as tasting of blueberry is a complicated notion for even the most involved Western oenophile. How does one comprehend this taste if one has never seen or tasted a blueberry before? An exported Australian wine using passion fruit as a descriptor on a back label is potentially equally vexing. How many passion fruits grow in New York or London – key markets for Australian wine? Would providing the wine industry with culture specific terms for the Chinese market be advantageous?

A study conducted in Spain and France by Saenz-Navajas et al. (2013) on culture and wine expertise lends credence to this question, as they found that the geographic location of the respondents and the availability of the specific agricultural products in their regions impacted their ability to recognise those sensory markers. Boroditsky (2001) conducted a study with bilingual – English and Mandarin – respondents on their perception of time in the English and Mandarin language. Although not on wine, this study indicates that the structure of the language can impact how a theme is perceived. Fenko et al. (2010) explored the cross-over of sensory terms between Dutch and Russian and their interpretation. Although culturally distant from China, this study indicates that there are generalisable complexities across languages and product descriptions. Blancher et al. (2007) showed the difference in the complexity of verbalisation of the description of jellies in Vietnam and France. These studies justify the need to research whether language impacts the expectation that Chinese consumers have for wine descriptions.

Jennie Cho Lee, a Master of Wine, with a particular expertise in Asia has published a list of culture specific tasting terminology for the Chinese market (Cho Lee, 2011). This progress should be lauded. However, this has never been investigated academically nor have these terms been scientifically linked to their supposed Western equivalent or their impact on preferences. This is much more than an interesting question. The Chinese market is of tremendous value globally to the wine sector. All wine producers, distributors and sellers (on-premise, off-premise and online) are battling to succeed in this competitive market. At a more strategic level, we all need to do what we can to increase the accessibility and appreciation of wine in China. Before major investment can be made into this strategy, it is necessary to use science to validate 1) if these proposed terms are truly transferable with their Western equivalent; 2) if patterns/clusters of preference for particular wine styles can be identified; and 3) if one type of specific terms are more effective in increasing preference (likability, willingness to purchase and perceived price point).

For brevity sake, only the first two points will be addressed in this paper. Furthermore, despite conducting analysis on white, red, sparkling and dessert wines, only results from the

red and dessert wine experimentation are provided due to space constraints.

## 2. Sample and method

A central location hedonic liking test was conducted in three Chinese cities: Shanghai, Guangzhou, and Chengdu in August 2013. In order to qualify for the experiment, participants had to be between 18-50 years old, reside in the test cities, drink imported wine at least once per month, not be involved in the wine trade or ever have participated in a wine tasting course or any other research study in the 3 months prior to the commencement of this research.

A total of 263 respondents completed the study. A sensory research company with experience working with international clients in this field was recruited to execute the study with a member of the research team present during all wine preparation and data collection in all three Chinese cities. The data collection ran over four consecutive days in each location. The entire data collection was completed over a three-week period. Each day of data collection consisted of three sessions of approximately 75 minutes for each set of respondents. Respondents agreed to participate in two sessions, one per day over two consecutive days in order to manage the load of alcohol consumption and keep their palates as fresh as possible.

During each session, respondents evaluated seven wines divided in two blocks: 1) red (5 types) and dessert (2 types) wines; and 2) sparkling (3 types) and white (4 types) wines, for a total of fourteen wines tasted by each respondent over two days. The wines were selected by members of the Australian Wine Research Institute (AWRI) and the Ehrenberg-Bass Institute for Marketing Science (EBI), who chose the most dominant wine styles Australia exports to China. These wines were sourced in China from distributors and air freighted back to Australia to be profiled by the AWRI trained descriptive analysis panel. The final list of wines can be seen in Table 1.

**Table 1: List of wines used in the study**

| Type | Wine no. | Wine |
|---|---|---|
| Red wines | 170 | 2010 Adelaide Hills Shiraz |
| | 283 | 2011 Mornington Peninsula Pinot Noir |
| | 396 | 2011 McLaren Vale Grenache |
| | 509 | 2011 Margaret River Cabernet Sauvignon/Merlot |
| | 912 | 2010 Barossa Valley Shiraz |
| White wines | 291 | 2011 Margaret River Chardonnay |
| | 390 | 2012 South Australian Viognier |
| | 448 | 2011 Margaret River Sauvignon Blanc/Semillon |
| | 919 | 2012 Clare Valley Riesling |
| Sparkling wines | 405 | 2005 Yarra Valley Chardonnay/Pinot Noir Sparkling |
| | 756 | Victoria Zibibbo Rosè Sparkling (nv) |
| | 937 | Australian Moscato Sparkling (nv) |
| Dessert wines | 713 | 2012 King Valley Moscato |
| | 946 | South Australian Tawny (nv) |

Within each session, all respondents tried the red wines before the dessert wines. The allocation of the wines within each style was controlled by a randomised block design. The wines were presented monadically in three-digit coded wine glasses, each containing 30ml of wine with a confirmed temperature theshold for each wine style. Each respondent was given a two minute break between wines of the same style and five minute break between wines of different styles with water provided between each sample to cleanse the palate.

The surveys were designed in English, professionally transalated into Mandarin and then

back translated by a third party into English to prevent translation bias. In order to prevent confusion in data collection, each evaluation was conducted on a separate piece of paper. Liking ratings, willingness to pay measures and price perceptions were colelcted, but these data are not presented here due to space limitations.

After the ratings, a list of generic and specific wine descriptors was shown to respondents. After trying each wine, the respondents were asked to tick all the generic and specific wine descriptors they could perceive through tasting the wine. The terms were listed on the survey instrument according to the Chinese Pynin system, which is the official phonetic system for translating the sounds of Chinese characters into Latin alphabet.The list of generic descriptors included eighteen terms commonly used to describe wines (see Table 2).

**Table 2: List of generic descriptors**

| | | | |
|---|---|---|---|
| Sour | Pure | Intense | Balanced |
| Mellow | Full bodied | Fruity | Oaky |
| Astringent | Bitter | Sweet | Pungent |
| Lingering | High alcohol | Refreshing | Spicy |
| Smooth | Light | | |

The list of specific terms was developed according to the results of a qualitative study conducted by Corsi et al. (2013) on the most common descriptors Chinese consumers use to describe red, white, sparkling and dessert wines. The researchers generated the list of hypothetical equivalences for this qualtitative study from the Western and Chinese specific descriptors proposed by Jennie Cho Lee (2013). The list of Chinese red wine terms and their Western equivalences applied in this quantitative study can be found in Table 3 below.

**Table 3: List of specific descriptors for red wines and tawny (NV)**

| RED WINES + TAWNY (NV) | |
|---|---|
| **CHINESE** | **WESTERN** |
| Yangmei | Strawberry |
| Dried Chinese hawthorn | Blackberry preserve |
| Dried wolfberry | Strawberry preserve |
| Dried Chinese red dates | Plum |
| Fresh Chinese red dates | Blackcurrant |
| Fresh wolfberry | Raspberry |
| Clove | Clove |
| Star anise | Star anise |
| Chinese black tea leaves | Dark cherries |
| Persimmon | Red plum |
| Chinese sausage | Cooked game |
| Pine nut | Vanilla |
| Chinese salted pork | Bacon |
| Chinese green peppers | Green bell peppers |

The respondents were only presented one of the two sets of specific descriptors – Chinese or Western – depending on their group allocation. They were also standardised for respondents across both tasting sessions. The specific descriptors tested for each wine varied according to the wine style evaluated

The study followed a between-subject design, where the equivalence between Chinese specific terms and Western specific terms could be tested. Given that both groups evaluated the same wines, having the generic terms standardised across groups is an effective protocol

to test the similarity of the groups as one would expect that the evaluation respondents give to the wines using the generic terms would be nearly identical. Upon confirmation of this, the way in which the respondents evaluate the wines based on specific descriptors can then be tested to scientifically validate what Chinese terms are statistically linked to their equivalences.

Correspondence analysis (CA) was used to analyse the data. This multivariate statistical technique is conceptually similar to principal component analysis (PCA), but instead of using continuous variables, it is applicable to categorical data. As in PCA, the output of CA is a set of coordinates onto the *i* dimensions of a CA plot for each of the items included in the analysis (in our case wines and descriptors). For ease of interpretation, the plot is often reduced to two dimensions. However, differently from PCA, where each axis can be defined by the factor scores each original variable is loaded onto, the axes in CA have no other meaning than a bi-dimensional representation of the associations between the items displayed in the plot (Beh, 2004; Greenacre, 2007).

## 3. Results

The results relative to the descriptors for red wines and a South Australian tawny (NV) (Figure 1 and Figure 2) show that both groups of respondents evaluated the wines in a similar way, associating most of the generic and specific descriptors around the same wines. Wine 283, the 2011 Mornington Peninsula Pinot Noir, and wine 946, the South Australian tawny (NV), are perceived to be distintively different from the other wines – the 2011 Adelaide Hills Shiraz (170), the 2011 Mclaren Vale (396), the 2011 Margaret River Cabernet Sauvignon Merlot (509), and the 2010 Barossa Valley Shiraz (912).

Also, the majority of the generic descriptors (fifteen out of seventeen) associated with these wines are identical across the two groups, thus proving that at an aggregate level, respondents evaluated the wines in an identical way. Most of these descriptors cluster around wines 170, 396, 509, and 912, which are perceived to be smooth, pure, lingering, balanced, astringent, bitter, oaky, mellow, full bodied, intense, high in alcohol, and pungent. These wines represent the more traditional fruit-driven, full-bodied, high-alcohol wines Australia became famous for worldwide. Wine 283, the 2011 Mornington Peninsula Pinot Noir, is perceived to be light, refreshing and sour. The only divergence between the two groups is relative to associations with wine 946, the South Australian tawny. The wine is perceived as sweet by both groups. However, the group in the Chinese descriptors' condition evaluated this wine as also being fruity and spicy, but in the Western descriptors' condition these two terms are more closely associated with the four still red wines.

For the specific descriptors, the hypothetised equivalences are verified for eight out of the fourteen descriptors used for for red wines and the South Australian tawny (NV). In particular, looking at the cluster containing wines 170, 396, 509, and 912 the Chinese terms "yangmei", "Chinese sausage", "Chinese green peppers", "persimmons", "Chinese salted pork", and "pine nut" are found equivalent to "strawberry", "cooked game", "Asian green peppers", "red plum", "bacon", and "vanilla", while the equivalence between "dried Chinese red dates" and "plum" does not seem to be supported.

The equivalences between "strawberry preserve" and "dried wolfberry" with "blackberry preserve" and "dried Chinese hawthorn" are supported as descriptors of the South Australian tawny (NV). However, the group who evaluated the wines with Chinese descriptors seem to associate more elements with the Australian tawny such as "fresh and dried Chinese red dates", "fresh wolfberries", "star anise", "Chinese black tea leaves", and "clove". These elements in the Western equivalent form ("blackcurrant", "plum", "raspberries", "star anise",

“dark cherries”, “clove”, fruity and spicy) are instead clustered around the other four still red wines.

Table 4 summarises the equivalences between Chinese and Western wine descriptors for red wines and the South Australian tawny (NV).

**Table 4: Equivalences between Chinese and Western specific wine descriptors for the red wines and the tawny (NV)**

| RED WINES + TAWNY (NV) | | |
|---|---|---|
| **CHINESE** | **WESTERN** | **EQUIVALENCE VERIFIED** |
| Yangmei | Strawberry | √ |
| Dried Chinese hawthorn | Blackberry preserve | √ |
| Dried wolfberry | Strawberry preserve | √ |
| Dried Chinese red dates | Plum | X |
| Fresh Chinese red dates | Blackcurrant | X |
| Fresh wolfberry | Raspberry | X |
| Clove | Clove | X |
| Star anise | Star anise | √ |
| Chinese black tea leaves | Dark cherries | X |
| Persimmon | Red plum | √ |
| Chinese sausage | Cooked game | √ |
| Pine nut | Vanilla | √ |
| Chinese salted pork | Bacon | √ |
| Chinese green peppers | Green bell peppers | X |

**Figure 1: Correspondence analysis map for the red wines and the tawny (NV) – Chinese descriptors**

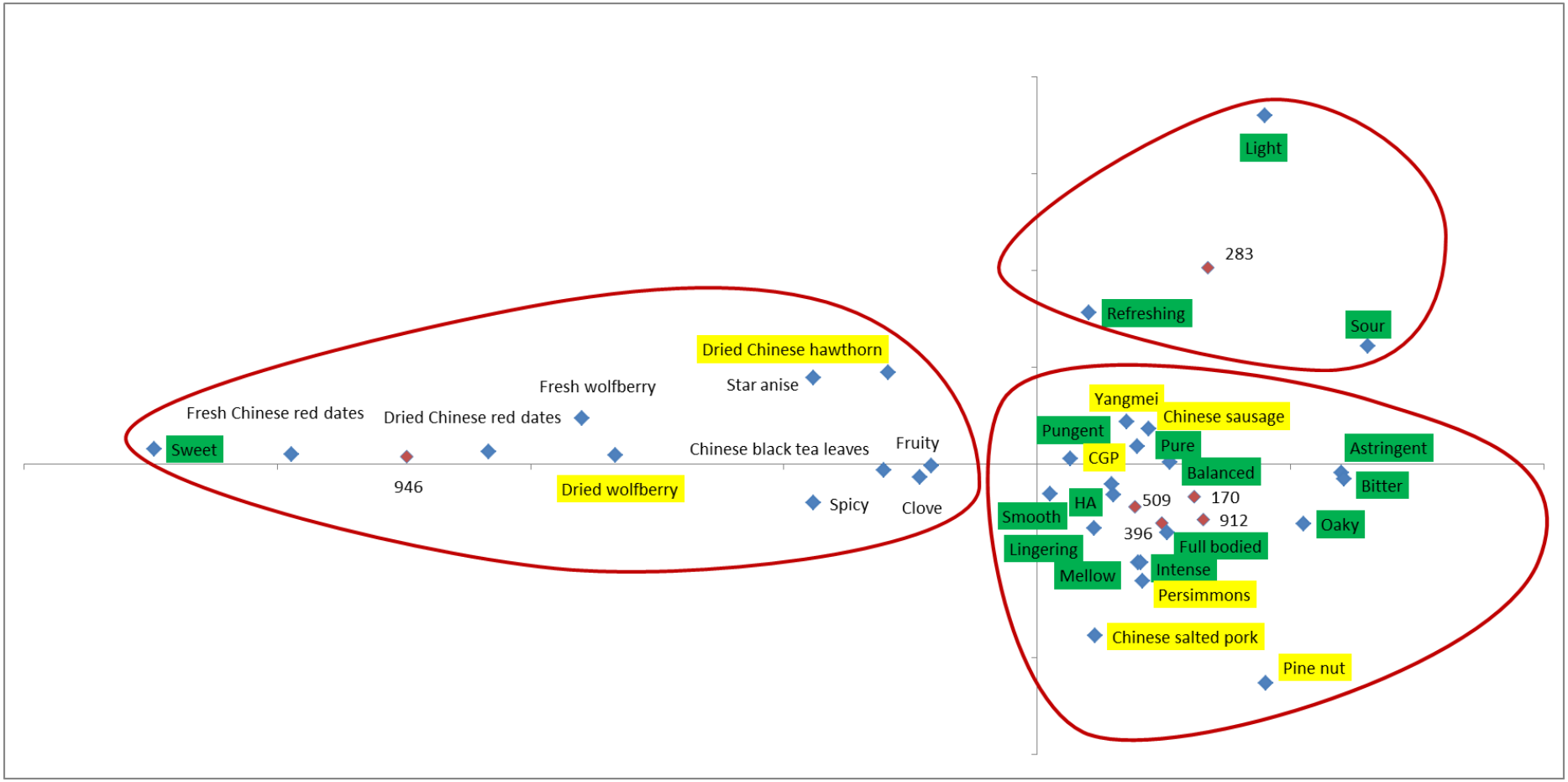
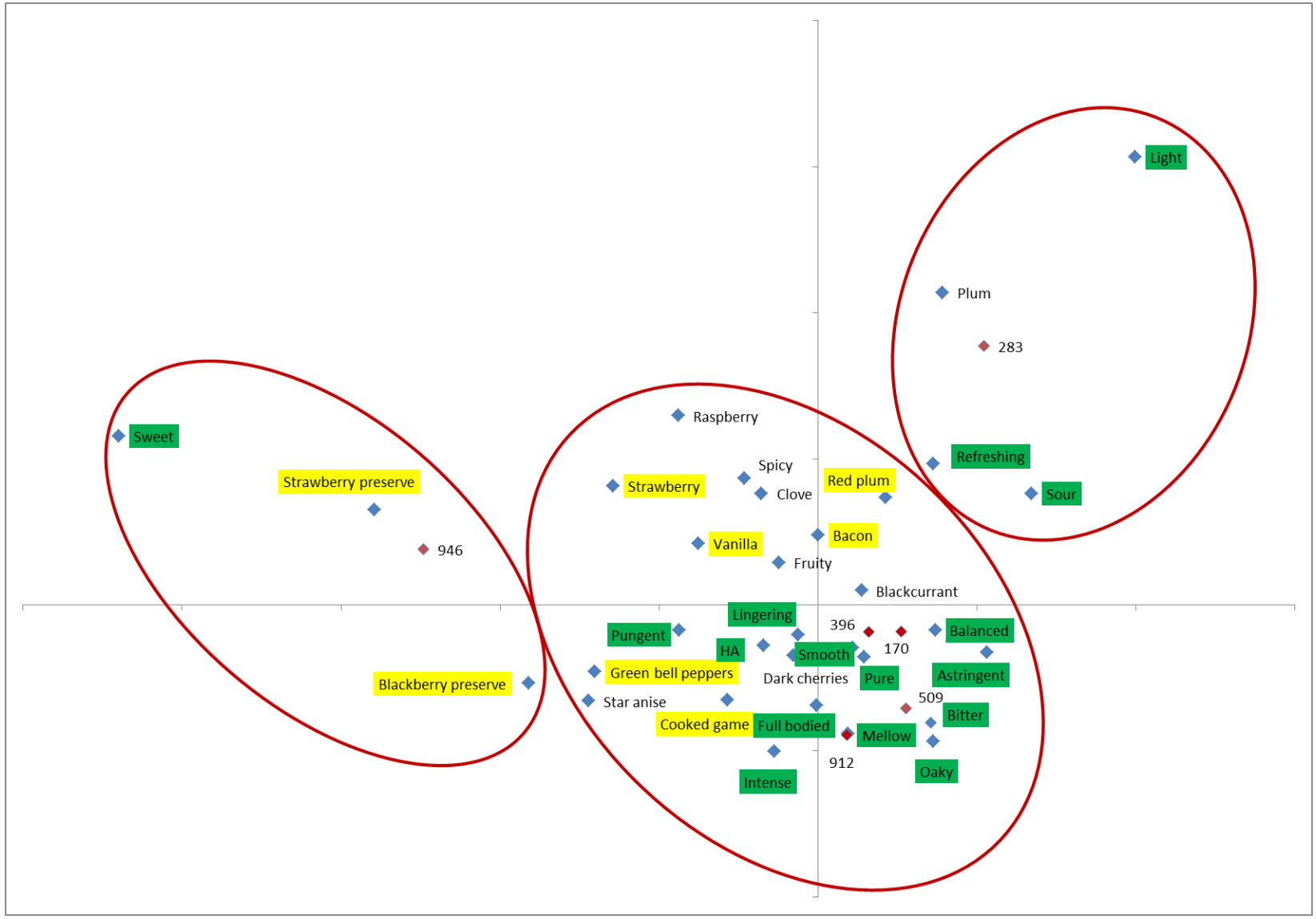


**Figure 2: Correspondence analysis map for the red wines and the tawny (NV) – Western descriptors**



## 4. Discussion and conclusions

This study has been the first to validate any equivalence of the Chinese specific terms indicated by Jennie Cho-Lee (2011). Eight of fourteen Western descriptors were found to have Chinese equivalents in our test of five red and one tawny port wines. Furthermore through the correspondence analysis, we were able to identify clusters of taste descriptors around particular wine styles, which help wine makers to understand not only the Chinese terms that can be used to describe the sensory profile of their wines to consumers, but also the potential consideration set of competing styles in a Chinese-centric sensory profile. This is one of the first empirical research projects that looked at wine evaluation from the Chinese viewpoint. Future analysis of the data will add white and sparkling wines and include likeability, willingness to pay and perceived price points for each wine for respondents using Western versus Chinese terminology. The full suite of insights should serve to inform not only Australian producers, but the global industry on how best to describe their wines and position them amongst their competition in this valuable market.

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