

TYPICALITY OF HERBAL TEAS: THE ROLE OF CONSUMERS' HEDONIC DIMENSIONS

MỨC ĐỘ ĐẶC TRUNG CỦA TRÀ DƯỢC THẢO VÀ VAI TRÒ CỦA CÁC YẾU TỐ TÂM LÝ NGƯỜI TIÊU DÙNG

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TÓM TẮT

Mục tiêu của nghiên cứu này là đánh giá mức độ đặc trưng của trà dược thảo trong tương quan so sánh với trà truyền thống và trà hòa tan, đồng thời khảo sát mối quan hệ giữa thị hiếu người tiêu dùng với hình ảnh trà đặc trưng. Mẫu nghiên cứu là 40 sản phẩm trà túi lọc được chọn từ 3 phân nhóm: trà truyền thống (trà xanh ướp hương hoặc không ướp hương, trà oolong, trà đen), trà dược thảo, và trà hòa tan. Có ba thí nghiệm được tiến hành trong nghiên cứu này. Trong thí nghiệm thứ nhất, thí nghiệm phân nhóm tự do, ba mươi người thử được yêu cầu phân nhóm 40 mẫu trà vào bao nhiêu nhóm tùy ý, dựa vào sự giống nhau giữa chúng. Sau đó, trong thí nghiệm phân nhóm bắt buộc, họ lại được yêu cầu xếp các mẫu trà vào hai nhóm “trà” và “không phải trà”. Thí nghiệm thứ ba, thí nghiệm thị hiếu, được tiến hành trên một nhóm 49 người khác. Những người này được yêu cầu đánh giá mức độ chấp nhận, mức độ dễ chịu, và mức độ ưa thích cũng như mức độ đặc trưng và quen thuộc của từng mẫu trà trên một thang 9 điểm có cấu trúc (với điểm 1 tương ứng với mức thấp nhất, và điểm 9 là mức cao nhất đối với từng chỉ tiêu đánh giá). Kết quả cho thấy trà dược thảo không được đánh giá cao ở mức độ đặc trưng. Bên cạnh đó, hệ số tương quan cao giữa các yếu tố tâm lý và yếu tố thị hiếu cho thấy có sự ảnh hưởng của thị hiếu người tiêu dùng lên mức độ đặc trưng của trà dược thảo.

ABSTRACT

This study was conducted to assess the typicality of herbal teas in comparison with traditional teas and to investigate the relationship between consumers' preferences and the typical tea model. The samples were 40 different tea products chosen from three subcategories: regular teas, herbal teas and instant teas. There were three experiments carried out in this study. In *Free sorting task*, thirty subjects were asked to sort freely the 40 teas in as many groups as they wanted, based on the similarity of the teas. Then, in *Forced sorting task*, they put the 40 teas in two groups “tea” or “not tea”. To identify the preferences of herbal teas, the group of 49 untrained subjects rated the hedonic factors (acceptance, pleasantness and liking) as well as the psychological factors (typicality, familiarity) on a structured 9-point scale. The results showed that the typicality degree of herbal teas was not as highly scored on typicality scale as the one of traditional teas was. Besides, the strong correlation coefficients between psychological and hedonic factors showed the significant effects of consumers' preferences on the typicality of herbal teas.

1. INTRODUCTION

Herbal tea has long-term formation and development. Tea (*Camellia Sinensis*), the main contribute of an emblematic herbal tea, comes from China. The Chinese have drunk tea and used tea as the important remedy to

increase memory, alertness, discrimination and pleasantness since 2500 B.C (Hoang Khanh, 2001). Because tea has such virtues, the famous Chinese physicians had combined tea with other medicinal herbs to create new medicines, called “herbal teas with tea”. To enrich this medicine group, they created the

cures that did not contain tea, just medicinal herbs, were “herbal teas without tea” (Hoang Khanh, 2001).

Today, herbal tea is considered as a functional food in Vietnam market because of its ability of preventing and treating diseases. Therefore, most of the published researches concentrated on the medicinal properties of herbal tea (Perry, 1997; Clotfelter, 1998; Brown *et al.*, 1999, Hoang Khanh, 2001). Besides being a functional product, herbal tea is the traditional beverage with special properties relating to the characteristics of herb varieties. It is regarded ‘typical’ food product. In general definition, typicality is the quality or characteristic that identifies a group, a kind or a category and it is also a feature that helps to distinguish a person or a thing (Vietnamese Dictionary, 2000). Furthermore, *Petit Larousse* dictionary (1994) defines *typicité* as the group of characteristics that makes the special nature of a food product. Issanchou (2004) supposed ‘typical product’ as a product corresponding to the information referring to the region of origin and to the type of production, i.e. it possesses some specific properties, and in particular specific sensory characteristics. Chr ea *et al.* (2004) referred to the psychological construct of ‘typicality’ which proposed that a cognitive category is structured around typical category members that are metaphorically at the centre of the category, and less typical members that are organized around the typical members along a typicality gradient (Rosch, 1973; Dubois, 2000). Dubois & Giboreau (2004) considered ‘typicality’ in three aspects: sensory analysis (distinctive properties), cognitive psychology (common features with other members within the category, relies on perceived similarity) and social psychology (fulfil some social needs, relies on correlation of social values), and a typical product is a fit between expected collective representations (stereotypes) and sensory individual experiences (prototypes).

Recently, the notion ‘typical’ product has been prized greatly by many traditional food producers. Lesschaeve (2003) recognized that wine *typicit * tends to be used as a quality factor to promote and sell wine. Lange (2001), Loken and Ward (1990), Ratneshwar and Shocker (1991) reported that ‘typicality’ is strongly related to preference and liking. Barsalou (1985) realized products that have

more often been associated with the consumption occasion are perceived as more typical. Base on those studies, we found the relationship between typicality and product consumption. In case of herbal tea, Nguyen Ba *et al.* (2003) centred to evaluate the typicality degree and sensory characteristics of herbal teas. The authors also suggested that the teas frequently drunk were regarded as “typical”. Furthermore, the results of this study showed that traditional green tea was considered the typical tea by the Vietnamese adolescence and the typical tea model driven by young consumers could be affected not only by the region of origin and sensory properties but also by the consumers’ psychological and hedonic factors such as liking and habit.

Though there are a number of published researches relating to the role of typicality in food product development, and many publications studied the nutrition of herbal tea, no study examined the effect of typicality on the herbal tea consumption and preferences. According to the previous researches, we assumed that the typical tea model in consumers’ perception was made of the traditional teas. The aim of this study was to verify our assumption of typical tea model and to find out how this typical tea was driven by consumers’ hedonic dimensions and how the typicality degree of herbal teas was in comparison with traditional teas.

2. SUBJECTS

All of the subjects participated in this study were recruited from the Faculty of Chemical Technology at the Ho Chi Minh City University of Technology, Vietnam. These individuals were separated into three groups depending on the objectives of the study. The first group (labeled Group 1) consisted of 30 untrained subjects (19 females and 11 males ranging in age from 19 to 22 years old). The second group (labeled Group 2) included 49 subjects (33 females and 16 males, age from 19 to 23 years old). They did not have any formal training or experience in the sensory evaluation. And the last one was a panel of 10 trained subjects. These panelists were trained in total of 12 hours to identify the flavors of herbal teas and to evaluate the intensity of general compounds (*bitterness*, *sourness*,

sweetness, artichoke, sweet grass, lemon, strawberry...) on an unstructured linear scale (100 mm).

3. SAMPLES

The 40 different tea products consisted of 8 traditional teas (green tea, black tea, oolong tea), 23 herbal teas and 9 instant teas. The samples were chosen from three subcategories: regular, herbal and instant teas with two commercial conditions: bag tea (with a volume of 2 grams per one teabag) and instant tea (20 grams per one). Each tea was coded by a number of 3 random digits and served in glass teacup at about 85-90 °C with a capacity of 20 ml.

4. PROCEDURE

Two sorting experiments were carried out by the same group of subjects (Group 1). In Free-sorting task (Chr ea *et. al.*, 2003; Valentin & Chollet, 2001), the subjects started by tasting all the tea samples, one at a time. Then, they were asked to sort the 40 teas in as many groups as they wanted, based on the similarity of the teas. After that, they labelled each group by a descriptive word and chose the representative for those groups. They were free to take as much time as they needed to complete the task.

After Free-sorting task, the subjects Group 1 took a rest in about 20 minutes. Then, they carried on Forced-sorting task (Chr ea *et. al.*, 2003). The participants were asked to put the 40 teas in two groups “tea” or “not tea” and chose the representative for each group, too. The samples in both sorting tasks were insured to be hot (about 55-60 °C) at the time the subjects tasted them.

To identify the effect of the hedonic dimensions on the typicality degree of herbal teas, the subjects Group 2 conducted the experiment in which they rated: (1) typicality degree, (2) familiarity, (3) acceptance, (4) pleasantness, and (5) liking on a structured 9-point scale (1-9) with the end anchors “extremely not typical / extremely typical” for typicality degree, “extremely unfamiliar / extremely familiar” for familiarity, “do not accept absolutely / accept absolutely” for acceptance, “extremely unpleasant / extremely

pleasant” for pleasantness, and “dislike very much / like very much” for liking. They assessed the samples in a random order, one after another and had a delay of 5 minutes every 10 samples.

A descriptive test using trained panellists (Mason *et. al.*, 2002; Meilgaard *et. al.*, 1999; Stone & Sidel, 2004) was designed to evaluate the sensory properties of the herbal teas. First, the panellists detected all of the tea attributes and described them. Then, they evaluated the intensity of those attributes on a 100 mm unstructured scale with the end anchors “very weak” and “very strong”. This task was carried out three times on three separated days with a delay of 2 days. The samples were served randomly and before tasting the next tea, the subjects rinsed their mouths by fresh water and have a delay of 2 minutes.

5. DATA ANALYSIS

A 40x40 matrix that represented the number of subjects who put together tea *i* and tea *j* in Free sorting task, was built. The matrix was then analyzed using Standard metric Multidimensional Scaling analysis (MDS) (Schiffmann *et. al.*, 1981) with the algorithm ALSCAL (Alternating Least-Square Scaling). The results were completed by Hierarchical Cluster Analysis (HCA). The number of times that each tea was put into “tea group” or “non-tea group” was presented on the same column graph. The mean scores of “typicality”, “familiarity”, “acceptance”, “pleasantness”, and “liking” were established for each sample and shown on 5 different graphs. ANOVA was used to evaluate the significant differences among the typicality degrees of 40 teas at the probability of 95%. And the correlation between the factors above was also assessed.

6. RESULTS

6.1 Two sorting tasks:

The results of Free sorting task were showed in **Fig. 1**. The 40 teas were separated into three groups. The first group consists of 9 instant tea samples; they are: peach tea (6), strawberry tea (8), leeches tea (13), lemon tea (14), pineapple tea (9), tamarind tea (15), Nestea lemon (28),

rum tea (25) and marrow squash tea (7), so we call it “instant group”.

The second is the group of 9 bag-teas. They all are products made of tea bud (*Camelia sinensis*) except for Lotus tea (39): it has medicinal herb (lotus) in its composition. Those are Pickwick green tea (36), green tea (37), Lipton apple flavour (27), Dilmah single origin tea (34), Lipton yellow label (35), Puerh tea (38), Jasmine tea (40) and Dilmah oolong tea (33). It was named “tradition group” (regular group).

All of the teas in the last group, Herbal group, are the herbal teas with medicinal herbs being main ingredients, such as: ginger, artichoke, sweet grass, seaweed, noni, bitter gourd etc. All of the herb ingredients above are the popular Vietnamese traditional medicaments.

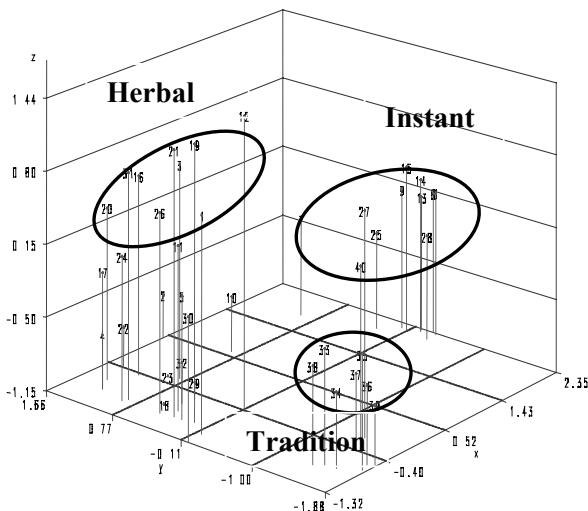


Fig. 1: Three-dimensional MDS configuration obtained from the Free-sorting task for clustering 40 teas

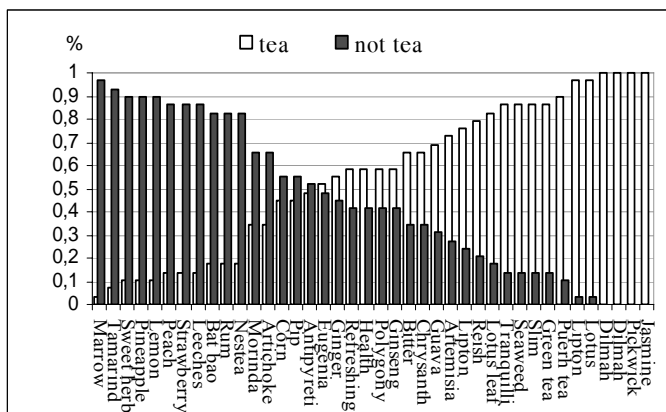


Fig. 2: Chart of the “tea” and “not tea”

Figure 2 represents the results of Forced sorting task. There are two groups of samples on the graph separated with each other; those are “non-tea group” on the left and “tea group” on the right. Between them, there is the group consisting of the tea samples whose “non-tea” and “tea” rate are approximately equal. They cannot be defined as “tea” or “not tea”. Therefore, it is called “mediate group”.

The borders of three tea groups were detected depending on the “being-tea” rate of each tea sample, as following: less than 33 percent: non-tea; more than 67 percent: tea; and between these values: mediate. On that rule, all traditional teas belong to “tea” group. This group consists of 16 teas whose fifty percent are herbal teas. A total of instant tea samples are in the “non-tea” group and all of the teas in “mediate” group are herbal teas.

The subjects have given a list of 49 descriptors used to name the tea-groups (**figure 3**). Among them, the taste-words surpass the others with both quantity (28.57%) and frequency (59% of total descriptive words). Besides, ingredients of teas (26.53 %), name of product (18.37%) and aroma (18.37%) are also the quotas that were involved in clustering tea samples.

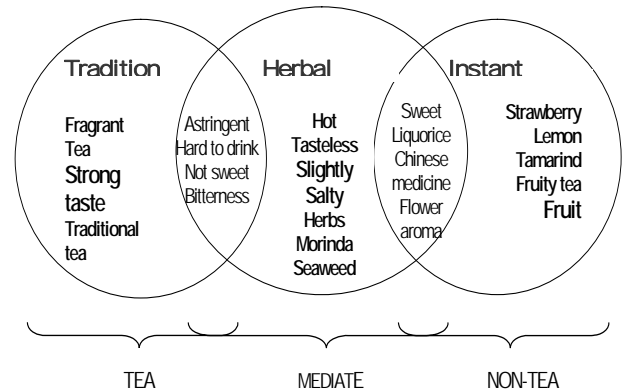


Figure 3: The descriptive words collected from Free-sorting task show the significant relation between three tea groups: tradition, herbal and instant

6.2 Typicality task:

The ANOVA result shows that the 40 teas are significantly different from each other on the typicality ($F_{39, 1872} = 21.481, p < 0.05$). The typicality degrees of 40 teas were plotted in **Fig. 4**.

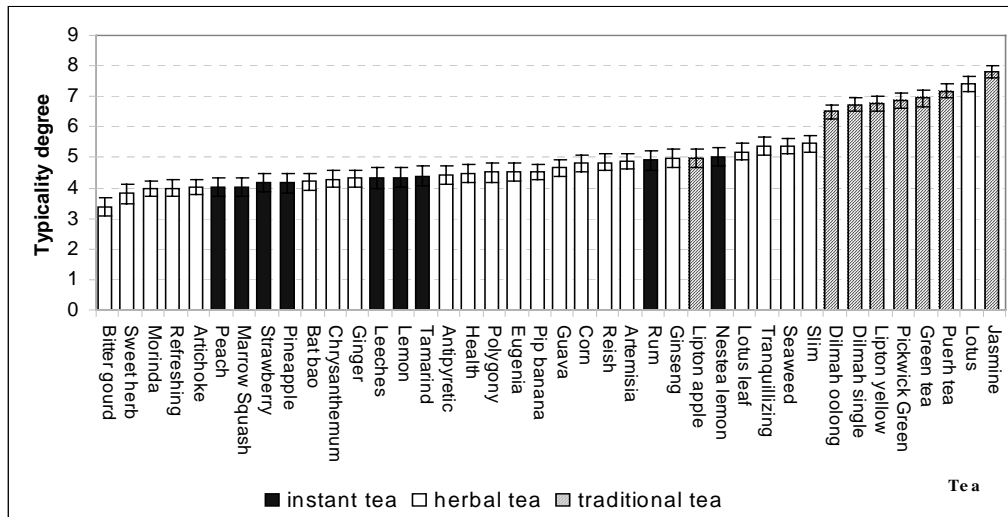


Figure 4: The typicality degrees of 40 teas: Herbal teas and Instant teas are less typical than Traditional teas.

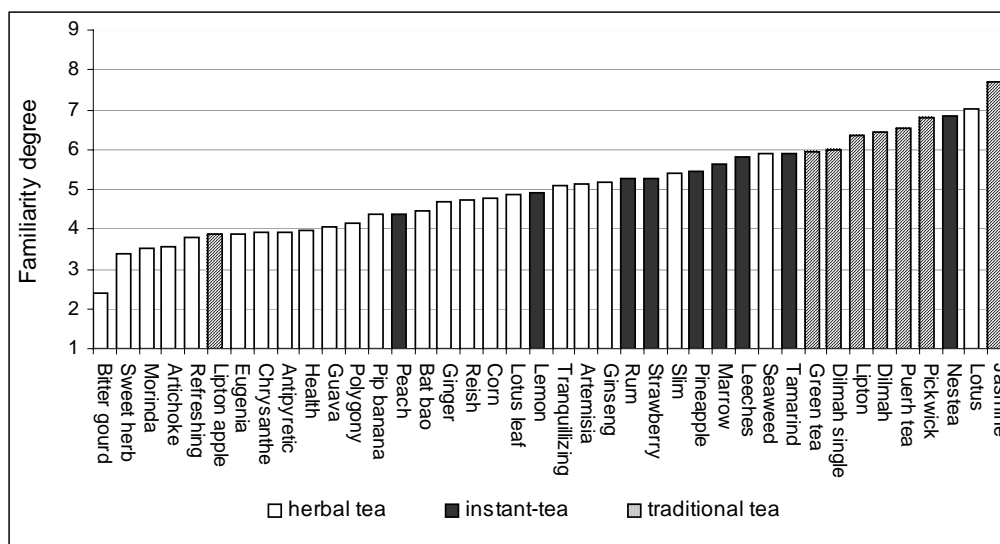


Figure 5: Familiarity degrees of 40 tea samples

The results permitted to put eight following teas in the typical group: jasmine tea (40), lotus tea (39), puerh tea (38), green tea (37), Pickwick green tea (36), Lipton yellow label (35), Dilmah single origin tea (34), and Dilmah oolong tea (33). All of them belong to both “tea group” in the Forced-sorting task and “tradition” group in Free-sorting task. The least-typical cluster includes herbal teas and instant teas. However, the instant teas seem to be more typical than the herbal teas.

6.3 Hedonic test:

Figure 5 performs the familiarity degree of 40 teas increasing from the left to the right. Based on it, the “tradition group” is more familiar than the others. And the “herbal group” is the least familiar one. This result may have a connection with the used-frequency of each tea (drunk more frequently, more familiar). About “Acceptance”, “Pleasantness”, and “Liking”, the “Instant group” is always the group that has the highest scores. “Herbal group” isn’t

valued highly at all, especially acceptance and liking.

The coefficients of correlations between typicality degree and pleasantness, acceptance, liking showed that there are significant correlations between the hedonic dimensions and the typicality degree of herbal tea (**Table 1**). These strong relationships express that the typicality degree of herbal tea is influenced significantly by subjects' hedonic dimensions. Furthermore, all effects of hedonic factors on typicality are almost balanced. This appraisal is also found in tradition group (**Table 2**). However, the correlation law in instant group is not similar to two groups above (**Table 3**). The typicality degree of instant tea seems not to involve in the hedonic factors. This explains why the instant teas are not typical though they are liked and accepted the most. In addition, the correlation coefficients between typicality and familiarity are always highest in three tea groups. This shows a consistent relation between typicality and familiarity.

Moreover, familiarity has the strongest effect on typicality in comparison with the hedonic factors.

Table 1. Correlation coefficients in herbal group

	Typical	Familiar	Accept	Pleasant	Liking
Typical	1.0000				
Familiar	0.9150	1.0000			
Accept	0.8065	0.8866	1.0000		
Pleasant	0.7626	0.8466	0.9733	1.0000	
Liking	0.7906	0.8937	0.9794	0.9730	1.0000

Table 2. Correlation coefficients in tradition group

	Typical	Familiar	Accept	Pleasant	Liking
Typical	1.0000				
Familiar	0.9491	1.0000			
Accept	0.8911	0.9649	1.0000		
Pleasant	0.8442	0.9190	0.9877	1.0000	
Liking	0.8920	0.9526	0.9961	0.9925	1.0000

Table 3. Correlation coefficients in instant group

	Typical	Familiar	Accept	Pleasant	Liking
Typical	1.0000				
Familiar	0.5879	1.0000			
Accept	0.4818	0.9049	1.0000		
Pleasant	0.5516	0.7912	0.8792	1.0000	
Liking	0.3110	0.8533	0.9362	0.9086	1.0000

6.4 The descriptive test:

Three tea groups have their own special properties, such as: rose smell, green tea aroma, jasmine odour, black tea for the tradition group; peach, strawberry, lemon, tamarind for instant group and pungent, liquorices, boiled bean, Chinese medicine for herbal group. Besides, they also have the same characteristics such as sweet aftertaste, astringent taste and brown. Especially, the herbal group has many common properties with the others. The descriptors the panellists used to assess the teas are shown in **Fig. 6**. It can be inferred that three tea groups do not separate extremely with each others.

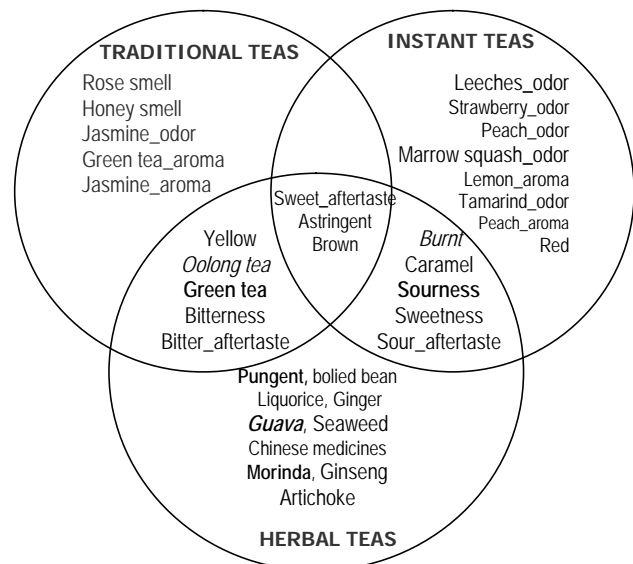


Figure 6: The descriptors of three tea groups in Descriptive test

7. DISCUSSIONS

This study reveals that really have the classification in tea category. This classification is in agree with three subcategories in tea market: regular tea, herbal tea and instant tea. These tea categories have their own characteristics that make them different from each others, and regular teas are the most typical teas over the categories. Herbal teas are not rated highly in typicality scale in comparison with traditional teas and even with some instant teas. The consumers' psychological factor (familiarity) and hedonic factors (pleasantness, liking and acceptance) have the significant correlations with the typicality degrees of tea beverages.

In Free sorting task, the key of clustering is the similarity / dissimilarity, and three tea subcategories are separated. This means three tea classes are different basically. In Forced sorting task, in fact, the key of grouping is the tea model in subjects' perception, and as a result, we ascertain the 'tea group' consists of the traditional teas (regular teas). Furthermore, the traditional teas are the most typical ones in typicality scale. This result is agreed with the ones of the previous study (Nguyen Ba *et. al.*, 2003) carried out in our sensory lab. The results of two sorting tasks and typicality test confirm that the typical tea model in Vietnamese students' perception is made of the traditional teas with the typical characteristics of tea bud (astringent, bitter, tea flavours) that derived from descriptive test. These findings are close to our previous assumption that the notion "tea" in Vietnamese drinkers' perception is still the "regular tea".

In case of odours, Holley (2001) suggests that some odours may be more typical because they have acquired a particular perceptual saliency. Chr ea *et. al.* (2003) supposed odours to which these high selectivity receptors are preferentially tuned might be more salient and therefore might be judged as more typical of a category. In this study, traditional tea is characterized by the terms such as: tea flavour, back tea, green tea aroma etc; all descriptors which have the component "tea" are belonging to this group. Moreover, Perry (1997) exposed that beverage connoisseurs considered "tea" to be the specific brew of one plant, Camellia – like bush with the Latin name *Thea sinensis* –

that is the main ingredient in all regular teas. Therefore, we assume that the traditional teas are typical because they possess the outstanding properties from the Camellia plant. In the meanwhile, herbal teas have the salient properties of herb varieties that might be too strange to the subjects' sensation to be the tea, and they are not typical.

Another possibility of typicality that is regarded in the work of Chr ea *et. al.* (2003) is the link between typicality and familiarity: more familiar odours may be judged as more typical than odours less familiar. Consistently with this hypothesis, we found the strong typicality – familiarity correlation in traditional tea group, as well, traditional teas are high familiar in the familiarity scale in hedonic test. Herbal tea group also has the significant correlation between typicality and familiarity, but herbal teas are not familiar to subjects at all. These findings approve the effect of familiarity factor on the structure of typicality. In extend, familiarity is one of the psychological factors that is driven strongly by experience. The experience is considered as the main factor in consumers' perception of any product (Goldstein, 2001, Coren *et. al.*, 2003). In this case, it can be said that the subjects' experience is underlying the formation of typicality of tea beverages.

However, typicality does not depend only on familiarity. We have found the closed correlations of typicality – acceptance, typicality – liking, and typicality – pleasantness. As well as experience factor (familiarity), hedonic factors have significant influences on the typicality of tea. For instance, the most typical teas are regular teas with the highest ratings of acceptance, liking and pleasantness. Therefore, we might suppose that if a tea is assessed highly on Familiarity, Acceptance, Pleasantness and Liking, it will be one of the most typical teas.

Consistently with past researches (Lesschaeve, 2003; Barsalou, 1985), we have found the important role of typicality in tea products' consumption due to the significant relations: typicality – acceptance and acceptance – consumption. In addition, we have discovered the strong correlations: familiarity – acceptance, liking – acceptance, and familiarity – liking in the tea beverages. Cantin and Dub e (1998) have found significant liking

– consumption correlations for the beverage categories. Therefore, we might suppose that both psychological and hedonic factors affected strongly on the tea consumption. Either typical tea or enjoyable tea or familiar tea is consumed very much.

8. CONCLUSIONS

The main goals of this study are identifying the typical tea model driven by the young consumers and determining the effects of hedonic factors on the typicality of herbal teas. As the results, we have found the typical tea similar to traditional teas (e.g. green tea). The hedonic factors such as liking, acceptance and pleasantness have important roles in the formation of the typical tea.

Now, the herbal tea products are not consumed highly in Vietnamese market. Their typicality degree is not evaluated highly, too. It is because the herbal teas are less familiar than the other teas. Familiarity is the cognitive factor that affects on the typicality of tea very much. Therefore, the development of herbal teas can be improved by promoting their familiarity toward the consumers.

The effects of gender, age, and subcultures on the typicality degree of herbal teas will be the objectives of our researches in progress.

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