Effect of familiarity of soy sauce on lexicon development of trained sensory panelists in Thailand and the United States of America

Panat Cherdchu [1], Edgar Chambers IV [1], and Thongchai Suwonsichon [2]

[1] Sensory Analysis Center, Department of Human Nutrition, Justin Hall, Kansas State University, Manhattan, Kansas, 66506, U.S.A

[2] Department of Product Development, Faculty of Agro-Industry, Kasetsart University, Paholyothin Road, Bangkok, 10900, Thailand

Introduction:

A well-developed lexicon for describing the sensory characteristics of the product of interest can provide accurate and reproducible results for descriptive sensory analysis. Several studies have been conducted to validate lexicons, and compare the results from different groups of panelists, occasionally from different countries/cultures. Each culture can have a different level of familiarity toward the same products (Drake et al. 2005; Blancher et al. 2007). Disagreement in results from panelists who have different familiarities with a product were found when similar products were presented in one study (Drake et al. 2005). Additionally, familiarity may also affect panelists' interpretation of a specific lexicon when it is linked with their experiences or cultural background (Risvik and others 1992; Blancher et al. 2007; Chung and Chung, 2007). No research was found where panelists with different levels of familiarity with the product and different cultural backgrounds worked together to develop a lexicon. This research was conducted by using Thai and American panelists who have different familiarity levels toward the specific product category, soy sauce, which is commonly used in the East Asia.

Objectives:

(1) to develop consensus terms, definitions, and references for describing sensory characteristics of soy sauce products with Thai and US panelists together.

(2) to compare the lexicons of identical products developed by Thai and US trained panelists who had different familiarities toward soy sauce products.

Materials and Methods:



Panelists:

- Nine Thai and four American panelists from Kasetstart University Sensory and Consumer Research Center and the Sensory Analysis Center at Kansas State University.
- All panelists were females between 30-65 years old.
- Both panels had been trained in descriptive analysis in about 120 hours of training.
- Neither group had previously evaluated soy sauce products.
- These two groups differed in their familiarity and use of soy sauce.



Samples and Sample Preparation:

- 116 soy sauce samples were purchased and grouped based on odor characteristics by 5 sensory analysts.
- Twenty-five of the samples were selected and used in this study.



Sample Preparation:

- The samples were stored at 5-7 ^{o}C in a refrigerator.
- Ten mL of soy sauce sample was measured in a clear plastic cup, covered with lid.
- The samples were coded with 3-digit random numbers.



Sample evaluation procedure:

- The Thai and American panels separately evaluated the same samples at the same period of time.
- The panelists discussed the perceived characteristics
- Panelists had at least 5-minute break after each sample evaluation.
- The Panelists cleaned their palate with spring water and unsalted crackers between samples.

Selection and Descriptors Identification:

- The panel leader collected the terms and definitions from the members.
- Two groups then met to compare, discuss, and finalize the lexicons they had generated separately.
- Additional samples and references were provided to panelists when requested

Results:

- Most of the attributes listed by each group of panelists provided similar definitions and references.
- There were some attributes that where not agreed on by the two groups of panelists.
- These problems can be classified into three aspects.

(1) **Uncommon terms**: Some terms were not used by the Thai panel because the term either does not exist in the Thai language, or the they could not find appropriate words to call the characteristic.

(2) **Uncommon Characteristic:** Occasionally a term was not common or not known to panelists.

(3) **Complex characteristics:** The Thai panelists had difficulties describing and understanding some overall terms such as brown or brown spice and some complex terminology (musty) once it was divided into smaller characteristics such as "earthy-damp", "moldy-damp".

- Sixty-four terms were found to be useful to both panels for the final lexicon.
- The terms were classified into 4 aspects listed below.

Common Term			
Alcohol	*Fishy*	*Nutty*	*Sulfur*
Animalic/Barnyard	*Fruity*	*Plastic*	*Sweet aromatics*
Astringent	*Fruit, cooked*	*Prickly*	*Sweet*
Beany	*Green*	*Pungent*	*Tobacco*
Bitter	*Hay like (parsley like)*	*Rodent*	*Tongue burn*
Caramel	*Heavy Oil/Petroleum*	*Salty*	*Tongue tingle*
Cheesy	*Meaty*	*Sesame*	*Umami*
Chemical	*Medicinal*	*Smoky*	*Urinous*
Chocolate	*Metallic*	*Sour*	*Wet animal hair*
Coffee	*Molasses*	*Sour aromatics*	*Woody*
Dry	*Mushroom*	*Spicy*	*Yeasty (dough)*
Fermented	*Numbing*	*Seaweed*	
Uncommon Term			
Acrid	*Brothy*	*Roasted*	*Toasted*
Briny	*Cured*		
Uncommon/ Unknown Characteristic			
Roaches			
Complex Characteristic			
Brown	*Brown fruity*	*Brown Spices*	*Earthy-Hummus*
Earthy-Damp	*Earthy-potato*	*Moldy-Cheesy*	*Moldy-Damp*
Musty-Dusty	*Musty-Earthy*		

Conclusions:

(1) This study suggested that familiarity of products does not affect trained panelists' performance in developing terms for a lexicon.

(2) However, language and culture can be limiting factors that affect the ability to describe certain attributes, but using references helped.

(3) Thus, a set of references may be helpful for understanding sensory characteristics of products across cultures.

References:

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