

A terminological study of trilingual(Chinese-Korean-Japanese) presentation on food texture

Cherl-Ho Lee, Yasuhiro Ota and Rong Huei Chen

Department of Food Technology, Korea University, Seoul, 136-701 Korea

Faculty of International Studies, Bunkyo University, Chigasaki, 253 Japan

Department of Marine Food Science, National Taiwan Ocean University, Keelung, Taiwan

(Received May 6, 1994)

한·중·일 3개 국어의 식품조직감 용어 비교연구

이철호 · 야수히로 오타* · 롱휘첸**

고려대학교 식품공학과, 서울

일본 분쿄대학 국제학부, 일본*

국립대만 해양학원 수산식품학과, 대만**

(1994년 5월 6일 접수)

Abstract

The present study compares the texture describing terms used in East-Asian countries, China, Korea and Japan. The terms and definitions enlisted in the International Standard Sensory Analysis-Vocabulary, ISO 5492(second edition 1992) were used as the reference. It includes hardness, fracturability, chewiness, gumminess, viscosity, springiness, adhesiveness, granularity, conformation, moisture and fatness. The Chinese scripts used for the description of each textural terms in these three countries were compared and their native expressions were collected. The food items representing typical textual characteristics in the East Asian countries were also listed.

I. Introduction

Though the roots of Chinese, Korean and Japanese, which are three main languages of East Asia, are not coincidental, the region covered by these languages is known as a cultural area of Chinese script. Chinese script was brought to the Korean Peninsular and Japan islands in the 4th to 5th century. At that time, Korean and Japanese languages had not their own script, and a great effort was expended to apply Chinese scripts to the description of their languages. Therefore, the concepts defined by a Chinese letter are not always identical between these languages. Ota¹⁾ compiled the words of taste perceptions used in these three countries, and found similarities and discrepancies in the taste-describing terms between the countries. He suggested a model of multilingual vocabulary for the basic tastes on the basis of the

International Standard ISO 5492, Sensory Analysis-Vocabulary.

The ISO 5492, Sensory Analysis-Vocabulary, has been revised in 1992²⁾.

It comprises four categories; General terminology (1.1-1.28), Terminology relating to the senses(2.1-2.34), Terminology relating to organoleptic attributes (3.1-3.63) and Terms relating to methods(4.1-4.39). Among the terminology relating to organoleptic attributes, the terms for flavor consist 39 words, terms for appearance 9 words and terms for texture 15 words.

The texture describing terms in ISO 5492 : 1992 are classified into mechanical attributes(hardness, cohesiveness, viscosity, springiness adhesiveness), geometrical attributes(granularity, conformation) and surface attributes(moisture, fatness). The classification and definitions are basically adopted from those of

Szczesniak³⁾. In each textural attribute, the terms expressing the level of intensity, for example low, medium and high, are listed, and the examples of food items showing the characteristic textural property are given.

In the present study, the texture describing terms used in China, Korea and Japan were compiled and classified on the basis of the definitions in ISO 5492 : 1992. The Chinese scripts used for the description of each terms in the three countries were compared and their native expressions were collected. The East Asian food items representing the typical textural characteristics were also listed.

II. Availability of National Standards and Related Literatures

The textural describing terms listed in the industrial standards of the respective countries were collected from the following national standards.

China : GB 10221.3-88, Sensory Analysis Vocabulary-Terms relating to organoleptic properties⁴⁾

Korea : KS A7000-1990, Glossary of terms used in sensory test⁵⁾

Japan : JIS Z8144-1990, Glossary of terms used in sensory test⁶⁾

The native expression of textural properties were surveyed in the literatures in China^{7,8)}, Korea^{9,10)} and Japan^{11,12)}. The representative food items for each textural properties were suggested by the authors.

1. Hardness

Table 1 compares the terms relating hardness in Chinese, Korean and Japanese. The Chinese "rou-

ruan" for soft perception is understood by Japanese with "rou". Although in Korean Standard the Chinese script "ruan" is listed for soft, this letter is more closely related to tender perception in Korean. The correct expression of soft perception in Korean is "mureun". The adjective terms for firm and hard in Korean are also the native expressions "guden" and "dandanhan". For the expression of firm perception the three countries use different Chinese scripts one another, while for the hard perception they use identical letter "ying", but pronounced differently. The typical Asian foods are soybean curd for soft, staled rice cake for firm and dried rice cake for hard.

2. Fracturability

Table 2 shows the fracturability terms. Both Korean and Japanese do not use Chinese scripts for the expression of these terms, except for the brittle perception in Korean. The native expressions are mostly associated with the sound created by the deformation. The representative food items are steamed rice cake for crumbly, apple and raw carrot for crunchy, rice cookies for brittle, lettuce for crispy and baked wheat cake for crusty.

3. Chewiness

Table 3 shows the terms used for the expression of chewiness perception in China, Korea and Japan. The terms for tender and chewy in Korean Standard are noun, and the adjective words are "yonhan" and "jjolgittjolgithan". All the chewiness perceptions are expressed in the native terms in Japan. The representative food items are fish meat for tender, pounded rice cake for chewy and dried squid for tough.

Table 1. Hardness(堅固性): (3. 52)⁰ force required to achieve a given deformation

	Low level	Moderate	High level
ISO:	soft	firm	hard
China:	柔軟的(rouruande)*	結實的(jieshide)*	硬的(yingde)*
Korea:	軟한(yonhan)* 무른(mureun)	堅固(kyongo)* 굳은(gudeun)	硬한(Kyunghan)* 단단한(dandanhan)
Japan:	柔らかい(yawarakai)*	緻密な(timituna)	硬い(katai)*
Example			
ISO:	Cream cheese	Olive	Boiled sweets
East Asian:	Soybean curd	Staled rice cake	Dried rice cake

⁰Classification code number in ISO 5492, *Terms listed in the respective country's standards(GB, KS, JIS)

Table 2. Fracturability(破裂性): (3.54) force necessary to break a product into crumbs

	Low level	Moderate		High level	
ISO:	crumbly	crunchy	brittle	crispy	crusty
China:	軟的 (songruande)	酬的 (songcuide)	易碎的 (yisoide)	酬的* (sude)	有硬殼的* (youyinggiaode)
Korea:	부실부실* (busilbusil)	사박사박* (sabaksabak)	破碎性* (pasoisung)	바삭바삭* (basakbasak)	딱딱한* (ddagddaghan)
Japan:	もそもそした (mosomssosita)	かりかりした (karikarisita)	ぱりぱりした (baribarisita)	ぱりぱりした (pariparisita)	がさがさした (gasagasasita)
Example					
ISO:	Corn muffin cake	Apple Raw carrot	Peanut brittle Brandy snapes	Potato crisps Corn flakes	Crust of fresh French bread
East Asian:	Steamed rice cake	Apple, Raw carrot	Rice cookies	Lettuce cake	Baked wheat

Table 3. Chewiness(咀嚼性): (3.55) the number of chews required to masticate a solid product into a state of ready to swallow

	Low level	Moderate	High level
ISO:	tender	chewy	tough
China:	嫩的(nede)*	耐嚼性(naijiaode)	老的(laode)*
Korea:	柔軟性(yuyonsung)* 연한(yonhan)	咀嚼性(jeojaksung)* 졸깃졸깃한(jjolgitjolithan)	질긴(jilgin)*
Japan:	しなしなした(sinasinasita)	しこしこした(sikosikosita)	ごわごわした(gowagowasita)
Example			
ISO:	Young peas	Fruit gums Bacon rind	Old cow meat
East Asian:	Fish meat	Pounded rice cake	Dried squid

Table 4. Gumminess(膠狀性): (3.56) the effort required to disintegrate a tender product to the state ready for swallowing

	Low level	Moderate	High level	
ISO:	short	mealy	pasty	gummy
China:	細屑的 (shihgxide)	粉狀的 (fenzhuangde)	漿水狀的 (shuigzhuangde)	膠狀的 (jiaozhuangde)
Korea:	푸슬푸슬한 (puseulpuseulhan)	녹말감* (nokmalgam)	풀같은* (pulgateun)	고무질* (gomujil)
Japan:	ぱさぱさした (pasapasasita)	さくさくした (sakusakusita)	のりっぽい (norippoi)	コムっぽい (gomuppoi)
Example				
ISO:	Sort bread Cooked dry haricot	Certain potatoes Beans	Chestnut puree Oatmeal cereal	Overcooked Edible gelatin
East Asian:	Noodle dough	Boiled potatoes or sweet potatoes	Soybean past	Steamed rice cake

4. Gumminess

Gumminess is a secondary perception of cohesiveness, and for Asian people the definitions of gumminess perceptions are not as clear as other character-

istics, like hardness. As shown in Table 4, both Korean and Japanese do not use Chinese script for the expression of gumminess perception. The native expressions are also rather ambiguous. The representa-

Table 5. Viscosity(粘性): (3.57) resistance to flow

	Low level	Moderate	High level	
ISO:	fluid	thin	unctuous	viscous
China:	流動的 (liudongde)	稀的 (xide)	油滑的 (youhuade)	粘稠的 (nianchoude)
Korea:	流動的 (yudongjeok) 흐르는데 (heureuneun)	묽은 (mulgeun)	걸직한 (geoljikhan)	粘稠性* (jeomjoseong) 되다 (doida)
Japan:	さらりとした (sararitosita)	さらさらした (sarasarasita)	とろとろした (torotorosita)	どろどろした (dorodorosita)
Example ISO:	Water	Sauce	Double cream	Sweetened condensed milk, Honey
East Asian:	Water	Soysauce	Soymilk	Honey, Cereal powder Porridge

Table 6. Springiness(彈力性): (3. 58) the rapidity of recovery from a deforming force or the degree of recovery

	Low level	Moderate	High level
ISO:	plastic	malleable	elastic
China:	可塑的(kesude)	展性(juanxing)	彈性的(tanxingde)
Korea:	可塑性(kasoseong)*	말랑말랑한(mallangmallanghan)	彈力性(tanliokseong)*
Japan:	變形しやすい(henkeisiyasui)	ぶよぶよした(buyobuyosita)	復元しやすい(hukugensiyasui)
Example ISO:	Margarine	Marshmallow	Calamary, Clams
East Asian:	Rice dough	Fresh rice cake	Boiled clams

tive food items are noodle dough for short, boiled potatoes for mealy/powdery, soybean paste for pasty and steamed rice cake for gummy.

5. Viscosity

Table 5 shows the viscosity terms used in the three countries. Viscosity in a sensory perception which is relatively well defined by physical quantity. However, the expressions of viscosity perceptions in Korea and Japan are mostly native terms. The representative food items for viscosity perceptions are water for fluid, soysauce for thin, soymilk for unctuous and honey and cereal powder porridge for viscous.

6. Springiness

Springiness is a typical rheological property, which is quantified by viscoelastic parameters. As shown in Table 6, most of the springiness terms in Korea

and Japan are described in Chinese script. However, the Japanese words for springiness are different from Chinese and Korean. The representative food items for springiness perceptions are rice dough for plastic, fresh rice cake for malleable and boiled clams for elastic.

7. Adhesiveness

Table 7 shows the adhesiveness terms used in China, Korea and Japan. Both Korean and Japanese use their native expression for describing the adhesive perceptions. The representative food items for adhesive perceptions are boiled sticky rice for sticky, malt syrup for tacky and honey for goeey/gluey.

8. Granularity

Granularity is quantified by the size of particles in a product. The terms for granularity are mostly

Table 7. Adhesiveness(接着性): (3. 59) the force required to remove material that adheres to a substance

	Low level	Moderate	High level
ISO:	sticky	tacky	goeey gluey
China:	粘的(niande)	發粘的(faniande)	膠粘的(jiaoniande)
Korea:	진득진득한 (jindeukjindeukhan)	끈적끈적한 (ggeunjeokggeunjeokhan)	끈끈한 (ggeunggeunhan)
Japan:	ねばねばした(nebanebasita)	べたべたした(petapetasita)	べたべたした(betabetasita)
Example			
ISO:	Marshmallow topping	Cream toffee	Caramel sundae topping, Overcooked rice, Tapioca
East Asian:	Sticky boiled rice	Malt syrup	Honey

Table 8. Granularity(微粒性): (3. 60) the perception of the size and shape of particles in a product

	Absence	Low level	Moderate	High level
ISO:	smooth	gritty	grainy	coarse
China:	平滑的 (pinghuade)	粗造的 (cuzaode)	顆粒的 (kelide)	粗粒的 (culide)
Korea:	부드러운* (budeuroun)	粗粒의 (choripeui)	顆粒의 (kwaripeui)	거칠은* (geochileun)
Japan:	細砂狀の (saisyozono)	砂狀の (sazyono)	粒狀の (ryuzyono)	粗粒狀の (soryuzyono)
Example				
ISO:	Icing sugar	Certain pears	Semolina	Cooked rolled Oatmeal
East Asian:	Roasted soybean flour	Fine sugar	Broken rice	Ground corn/peanut

Table 9. Conformation(排列性): (3. 61) the perception of the shape and the orientation of particles in a product

	Long/oriented	Spherical/ovoid	Angular particle
ISO:	fibrous	cellular	crystalline
China:	纖維狀的(xianweizhuangde)	細胞狀的(xibaozhuangde)	結晶狀的(jiejingzhuangde)
Korea:	纖維質(seomyujil)*	細胞狀의(seposangeui)	結晶性(gyeoljeongseong)*
Japan:	纖維狀の(sen-izyono)	細胞狀の(saibozyono)	結晶性(kessyoseino)
Example			
ISO:	Celery	Orange	Granulated sugar
East Asian:	Chinese cabbage	Orange	Sugar, Salt

described by Chinese scripts in the three countries, as shown in Table 8. However, the letters used for each level of granularity perception are, in many cases, different between countries. The representative food items for granularity perceptions are roasted soybean flour for smooth, fine sugar for gritty, broken rice for grainy and ground corn or peanut for coarse.

9. Conformation

Conformation is a textural perception aided by the visible sense, which recognizes the shape and orientation. Table 9 shows that the terms used for the expression of conformational perceptions are identical in the three countries. This is the only case in the 11 textural characteristics studied, where all the Chinese scripts used to express different levels of a textural perception are identical in Chinese, Korean, and Japanese. The representative food items for confor-

Table 10. Moisture(濕潤性): (3. 62) the perception of water absorbed by or released from a product

	Absence	Low level		High level		Water-like perception
ISO:	dry	moist	wet	juicy	succulent	watery
China:	乾燥的 (ganzaode)	潮濕的 (chaoshide)	潤濕的 (runshide)	多汁的 (duozhide)	多漿的 (duojangde)	多水的 (duoshuide)
Korea:	마른 (mareun)	눅눅한 (nuknukhan)	촉촉한 (chukchukhan)	물기 많은* (nulgimanheun)	즙액이 흐르는 (jeubaegiheureuneun)	질은 (jileun)
Japan:	かわいた (kawaita)	しめった (simetta)	めれた (nureta)	汁っぽい (siruppoi)	汁氣の多い (sirukenoooi)	水氣の多い (mizukenoooi)
Example						
ISO:	Cream cracker	Apple	Water-chestnut Oyster	Orange	Meat	Watermelon
East Asian:	Dried cereals	Noodle dough	Apple	Orange	Meat	Watermelon

Table 11. Fatness(油脂性): (3. 63) the perception of the quantity or the quality of fat in a product

	Soaking/running fat	Exuding fat	High fat w/o exudation
ISO:	oily	greasy	fatty
China:	油的(youde)	油脂的(youzhide)	脂肪的(zhifangde)
Korea:	기름기(gireumgi)*	그리스모양(greasemoyang)*	굳기름의(gudgireumeui)
Japan:	油狀의(yujono)	軟脂狀의(nansijono)	硬脂狀의(kosijono)
Example			
ISO:	Salad with French dressing	Bacon, Chipes	Lard, Tallow
East Asian:	Pan fried vegetables	Deep-fried fish	Lard, Tallow

mational perceptions are Chinese cabbage for fibrous, orange for cellular and sugar or salt for crystalline.

10. Moisture

Table 10 shows that the expression of the moisture perceptions in Korean and Japanese are mostly native terms. The definitions of the high level moisture perceptions are somewhat obscure for Asian people. The representative food items for moisture perceptions are dried cereal for dry, noodle dough for moist, apple for wet, orange for juicy, meat for succulent and watermelon for watery.

11. Fatness

Table 11 shows that the fatness terms are described in Chinese script by Japanese, but in native expression by Korean. Although Korean people use the Chinese script "you" for oil and "zhifang" for fat, they prefer to use native expressions for the sensory perception. The Chinese letters used for the fatness

perception in China and Japan are slightly different each other. The representative food items for fatness perceptions are pan-fried vegetables for oily, deep-fried fish for greasy and lard or tallow for fatty.

III. Conclusion

The trilingual analysis of texture terminology in the East Asian countries, China, Korea and Japan, reveals some interesting aspects of cultural phenomena. In spite of the long cultural connections between the three countries for over 15 centuries through Chinese scripts, the Korean and Japanese people prefer to use their native expressions for describing the sensory textural perceptions. When the perceptions are described in the form of noun, Chinese scripts are mostly used, but in the form of adjective native expressions are used. The tendency of native expressions becomes more obvious as the sensory perceptions are more ambiguous and difficult to qua-

ntify.

Not with standing the preference to native expressions, many common terms in these three countries were found. Different Chinese letters for the description of identical perception in different countries were also observed. However, these discrepancies can be easily adjusted, if we try to develop a common sensory vocabulary system in East Asia, since the people still maintain the common cultural background of Chinese script. The example of representative food items for Asian people can be quite different from the corresponding European food examples. Selection of proper food example for a specific sensory perception is important for the correct use of sensory terminology between individuals as well as between countries.

Acknowledgement

This paper was presented to the Third Symposium on Chinese Dietary Culture, held in Taipei, Taiwan, September 8-11, 1993.

References

1. Ota Y. Taste-describing terms in East Asia. Korean J. Dietary Culture 3(1): 23, 1988.
2. International Standard; Sensory analysis-Vocabulary, ISO 5492, Second edition, 1992.
3. Szczesniak, A.S. Classification of texture characteristics. J. Food Sci. 28: 385, 1963.
4. Peoples Republic of China; National Standard GB 10221.3-88 Sensory Analysis Vocabulary-Terms relating to organoleptic properties. 1988.
5. Republic of Korea; Korea Standard KS A 7000. Glossary of terms used in sensory test, 1990.
6. Japan; Japan Industrial Standard JIS Z 8144. Glossary of terms used in sensory test, 1990.
7. 王同仁 編. 英漢辭海. 國防工業出版社, 北京, 1987.
8. 郭華江 編. 日漢擬聲擬態詞典. 上海譯文出版社, 1990.
9. Lee. C.H. and Park S.H. Studies on the texture describing terms of Korean. Korean J. Food Sci. Technol. 14(1): 21, 1982.
10. 李哲鎬, 蔡洙圭, 李震權, 朴奉相. 食品工業品質管理論. 裕林文化社, 1984.
11. 川端晶子. 食品物性學/レオロシ- とテクスチャー. 建帛社, 1989.
12. 吉川誠次. 食品の物性 2: 191-200, 1976.