

A Study on Consumer Consumption Patterns and Preferences for Commercial *Juk* (Porridge)

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ABSTRACT This study examined the actual consumption status and consumer preference for *juk* via questionnaire survey to provide useful basic data for the development of diversified commercial *juk* products. The survey data were collected from a target number of 450 participants living in the Seoul area. The subjects represented different age groups (over 20 years old) and both genders. Through a market survey based on five different retailers, which included *juk*-specialty stores, supermarkets, and local shopping marts, 17 kinds of commercial *juk* were chosen for the survey. Consumption frequency and purchasing factors were examined, along with preferences toward commercial *juk* products and areas for quality improvement. The results revealed that 54.0% of the respondents consumed commercial *juk*, and male consumers exceeded female consumers in number. It was also shown that those in their 20^s consumed commercial *juk* products the least as compared to other age groups. With regard to commercial *juk* preferences by type of production mode, females especially preferred specialty store *juk* while males preferred retort *juk* sold in supermarkets or local shopping marts. In addition, 85.7% of the total respondents indicated that commercial *juk* should be further improved in quality, and they specifically noted possible improvements in the areas of 'choice diversification' and 'healthy *juk*' products. Therefore, one can conclude that by making such improvements, increase in consumption and further diversification of commercial *juk* products could be realized.

KEYWORDS: commercial *juk*, preference, purchasing factors, quality improvement.

INTRODUCTION

Juk (porridge), as one of the initial cereal foods, has been consumed by humans from the dawn of agricultural civilization and was widely adopted as a main staple throughout antiquity (Yoon 1993). At the start of the farming era, *Juk*'s basic ingredients were primarily of cereals such as rice, barley, and millet. However, thereafter, with the gradual introduction of supplementary and additive ingredients such as vegetables, meat, shell fish, nuts, milk, herbal sources, and so forth, *Juk* became greatly diversified in its variety. According to the literature, varieties of *juk* amounted to approximately 170 different kinds, even during the Joseon Dynasty (Yoon 1997).

Because *juk* is a fluid food, consisting primarily of starch in a completely blended state, generated by boiling cereals in a large amount of water for a prolonged duration, it is

relatively easy to consume and suitable for digestion. As a result of these favorable characteristics, *juk* has become popular, especially for hospitalized patients, infants, and seniors. There are many different methods to prepare *juk*, such as utilizing whole cereal grains, roughly or finely ground grain powders, or segments of finely ground grains (Gang 1984). Since the calorie content of *juk* is substantially low at 20 kcal per 100 g (National Rural Resources Development Institute, 2006), it is often desirable to add supplementary ingredients to enhance its nutrition. And currently, *juk*, as a traditional Korean food, is being developed into products that can be recommended as highly suitable breakfast substitutes, diet foods, health foods, etc. (Lee and Han 1995).

With recent societal transformations, as well as trends toward simplifying dietary life, the current *juk* market is expanding rapidly. For instance, the six Korean commercial producers of *juk* had a total sales turnover of 750,000,000 won in 2000, which was increased to 1,000,000,000 won in 2001, showing a 33.3% annual increase rate. Furthermore, these manufactures experienced a high rate of annual increase of approximately 30% through 2006 (Lee 2006). In 2006, there were 690 individual shops specializing in *juk*

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sales, and this number is expected to increase according to predictions by the *juk* franchise industry. These retail stores are also expanding to international markets such as the U. S., Japan, and other countries (Yoon 2007). Due to the long and constant developments and improvements in *juk* production, *juk* has become one of the most readily available everyday foods. In addition, it was recently regarded as being a health-enhancing food, suitable for digestion, a nutritional supplement, beneficial for disease prevention, and a diet food.

Past research on *juk* has included studies examining the optimum conditions for *juk* production (Lee et al 2002, Lee et al 2005), consumer attitudes and preferences towards *juk* (June et al 1998, June et al 1999, Kim 2000), the development of instant *juk* products (Lee et al 1997), and quality characteristics related to *juk* storage (Lee et al 2002, Lee et al 2000). However, studies investigating the consumption patterns and consumer preferences for commercial *juk* products are somewhat lacking. Accordingly, using a questionnaire survey, and by being mindful of the current rapidly developing *juk* market, this study was primarily focused on the actual consumption status of commercial *juk*, the determining factors of consumers at the time of *juk* purchase, preferences related to the kinds of commercial *juk* available, and opinions and factors for improving *juk* quality. With the collected and analyzed data, the authors hope to provide useful information to aid the development of diversified commercial *juk* products in the future.

METHODS

Subjects and survey period

The survey data were collected from September 12, 2006 to October 25, 2006, with a target number of 450 participants living in the Seoul area of Korea. The subjects represented different age groups (over 20 years old) and both genders, and had various views on healthy eating. Among the total 450 returned questionnaires, 422 were accepted and 28 were excluded from the data analysis.

Juk samples in the questionnaire survey

Using a market survey based on five different *Juk* retailers, which included *juk*-specialty stores, supermarkets, and local shopping marts, the 17 most popular kinds of commercial *juk* were chosen for the questionnaire survey. Then, according to the production mode, these commercial *juk* products were divided into three different categories: specialty store *juk*, retort *juk* sold in supermarkets or local shopping marts, and powder *juk* sold in supermarkets or local shopping marts.

Questionnaire

The questionnaire used in this survey was modified based on previous studies by Yoon (2003) and Cho (2005). It contained questions pertaining to the frequency of *juk*

purchases and purchasing factors, preferences for commercial *juk* products, and quality improvement areas for commercial *juk*. To avoid the phenomenon that the frequency would be driven to 'ordinary', and to encourage more active reactions by the respondents, the scores were rated on a 4-point Likert scale (Heo 2007). In addition, the respondents answered a background questionnaire comprised of questions on demographic variables.

Data analysis

Statistical analyses were carried out using SPSS software (Version 12.0, SPSS Inc., Chicago, IL, USA). The general characteristics of subjects are reported as frequencies and percentages. The resulting values were analyzed using χ^2 -tests, ANOVA, and t-tests. Following analysis of variance, significant differences among the means were tested by Duncan's multiple range test ($p < 0.05$).

RESULTS AND DISCUSSION

General characteristics of the subjects

Table 1 shows the demographic characteristics of the respondents. A total of 422 subjects answered the questionnaire (male 46.9% and female 53.1%). The respondents were within the following age groups: 20-29 (23.7%), 30-39 (21.8%), 40-49 (21.6%), and over 50 (32.9%). The proportions of married and single respondents were similar at 52.1% and 47.9%, respectively, and 87.7% of the respondents were educated beyond the high school level. The following order was found for occupation: housewife (15.9%), business owner (15.4%), and sales and service (15.2%). For family type, 74.9% of the respondents fell into the nuclear family type. Half of the respondents (56.8%) had a monthly income between 1 and 3 million won.

Consumption status of commercial *juk*

Table 2 shows the consumption status for commercial *juk* according to gender and age group. For purchasing frequency, approximately 54.0% of the respondents stated they purchased *juk* 'sometimes' (40.3%) or 'frequently' (13.7%). In terms of gender, there was a significant difference between male and female consumers with regard to actual *juk* consumption frequency ($p < 0.001$), in which 42.9% of the male respondents stated 'sometimes' while 41.1% of the female respondents stated 'rarely'. A reason for higher purchasing frequency by the male rather than female consumers may be that males are not accustomed to cooking *juk* at home. In a study on preferences for traditional Korean *juk* (June et al 1998), female consumers usually tended to purchase *juk* as a meal, while male consumers used *juk* as a snack. The consumption frequency of commercial *juk* was also significantly different according to age group ($p < 0.001$). More individuals in the 20-29 age group responded with 'rarely' (52.0%) or 'never' (23.0%) consuming

Table 1. General characteristics of subjects

Variable	Group	N(%)
Gender	Male	198(46.9)
	Female	224(53.1)
Age(yrs)	20~29	100(23.7)
	30~39	92(21.8)
	40~49	91(21.6)
	≥50	139(32.9)
Marital status	Married	220(52.1)
	Single	202(47.9)
Education level	≤Middle school	52(12.3)
	Highschool	134(31.8)
	University	212(50.2)
	Graduate school	24(5.7)
Occupation	Office & Administration	49(11.6)
	Professional & Technical	20(4.7)
	Sale & Service	64(15.2)
	Public service & Teaching	53(12.6)
	Production & Labor	36(8.5)
	Housewife	67(15.9)
	Student	29(6.9)
	Business owner	65(15.4)
	Unemployed	34(8.1)
	Others	5(1.2)
	Family type	Nuclear
Extended		43(10.2)
Single		45(10.7)
Others		18(4.3)
Monthly income (10,000 won)	≤100	76(18.0)
	100~200	144(34.1)
	200~300	96(22.7)
	≥300	106(25.1)
Total		422(100.0)

commercial *juk* as compared to those in the other age groups. A 1996 study on the consciousness towards traditional

Korean foods (Jang et al 1996) reported that there had been some decrease in the consumption of these foods, including Korean crackers (HanGua), porridge (Juk), and rice cakes (Dduck). However, in contrast, a 2007 study (Han and Lim 2007) found an increase in the consumer interest for *juk* with respect to traditional Korean foods to commercialize. Moreover, this increase of interest seems to be directly or indirectly related to the consumption frequency of commercial *juk*. Despite more consumers purchasing commercial *juk*, as indicated in the results of this survey, those in their 20's still purchase less commercial *juk* than those in their 30's and 40's. Thus, traditional food marketers need to create distinct products that are targeted specifically to members of this younger population.

Table 3 presents the determining factors for consumer purchases of commercial *juk*. The male respondents viewed 'nutrition' (3.71) as the most important factor at the time of purchase, followed by factors such as 'sanitation' (3.67), 'taste' (3.62), 'serving size' (3.46), 'cost' (3.44), and 'manufacturing company' (3.09). On the other hand, the female respondents noted 'taste' (3.74) as the most important factor, followed by 'sanitation' (3.59), 'nutrition' (3.55), 'cost' (3.28), 'manufacturing company' (2.87), and 'serving size' (2.86). Among these factors, 'serving size' ($p<0.001$) and 'manufacturing company' ($p<0.01$) showed significant differences by gender. When examining the results by age group, consumers seem to consider the most important factors for *juk* purchase differently. For example, those in their 20's indicated 'serving size' (3.99) as the most important factor, those in their 30's stated 'sanitation' (3.83), and those in their 40's and 50's viewed 'taste' as the most important factor. Furthermore, the factors of 'taste' ($p<0.05$), 'serving size' ($p<0.001$), and 'manufacturing company' ($p<0.001$) showed significant differences among the respective age groups. These results are similar to another study where consumers believed 'taste' and 'sanitation' were the most important factors at the time of purchasing commercial *juk* (June et al 1999).

Table 2. Purchasing frequency of commercial *juk* (porridge) by gender and age

Variable	Frequently	Sometimes	Rarely	Never	Total	χ^2 -value
Gender						
Male	40(20.2)	85(42.9)	46(23.2)	27(13.7)	198(46.9)	22.232***
Female	18(8.0)	85(38.0)	92(41.1)	29(12.9)	224(53.1)	
Age(yrs)						
20~29	0(0.0)	25(25.0)	52(52.0)	23(23.0)	100(23.7)	109.012***
30~39	25(27.2)	33(35.9)	22(23.9)	12(13.0)	92(21.8)	
40~49	27(29.7)	40(44.0)	9(9.9)	15(16.5)	91(21.6)	
50	6(4.3)	72(51.8)	55(39.6)	6(4.3)	139(32.9)	
Total	58(13.7)	170(40.3)	138(32.7)	56(13.3)	422(100.0)	

*** $p<0.001$

Table 3. Determining factors at time of purchase of commercial *juk* (porridge) by gender and age Mean±Standard deviation (SD)

Variable	Taste	Nutrition	Serving size	Cost	Sanitation	Manufacturing company
Gender						
Male	3.62±0.49	3.71±0.53	3.46±0.69	3.44±0.85	3.67±0.53	3.09±0.95
Female	3.74±0.44	3.55±0.55	2.86±0.97	3.28±0.79	3.59±0.55	2.87±1.01
t-value	1.983	0.489	5.982***	1.615	0.381	2.797**
Age (yrs)						
20~29	3.76±0.43 ^b	3.66±0.54 ^a	3.99±0.95 ^b	3.41±0.95	3.66±0.50	3.11±1.02 ^b
30~39	3.75±0.44 ^b	3.65±0.62 ^a	3.37±0.77 ^b	3.30±1.01	3.83±0.46	3.37±1.51 ^b
40~49	3.59±0.45 ^a	3.57±0.50 ^a	3.35±0.71 ^b	3.56±0.54	3.38±0.55	2.75±0.83 ^a
≥50	3.64±0.48 ^{ab}	3.63±0.53 ^a	2.68±0.88 ^a	3.24±0.68	3.63±0.57	2.76±0.92 ^a
F-value	6.177*	0.466	45.125***	1.124	3.599	16.833***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Likert 4-point scale (1=Not important 2=Little important 3=Important 4=Very important)

Different superscripts within the same column are significantly different by Duncan's multiple range test ($p < 0.05$).

Preferences toward commercial *juk*

To better understand the consumption patterns for commercial *juk*, consumer preferences were surveyed by gender according to three modes of product manufacture, as well as by kinds of commercial *juk* products in the three different categories of production mode. The three categories were: specialty store *juk*, retort *juk* sold in supermarkets or local shopping marts, and powder *juk* sold in supermarkets or local shopping marts. A total of 17 different types of commercial *juk* were designated as *juk* samples in the questionnaire. For preferences based on the production mode (Fig 1), female respondents preferred 'specialty store *juk*' (2.74) to 'retort *juk*' (2.51) or 'powder *juk*' (1.90) sold in supermarkets or local shopping marts, while male respondents showed higher preferences for 'retort *juk*' (2.70) than 'specialty store *juk*' (2.57). Among the three categories, both groups showed lower preferences for 'powder *juk*' sold in supermarkets or local shopping marts. The explanation for these results may be related to the determining factors at the time of purchasing commercial *juk* such as taste and nutrition as well as convenience.

Table 4 shows consumer preferences according to the kinds of commercial *juk* within three different categories of production mode. In the category of specialty store *juk*, males preferred 'red bean *juk*' (3.76), 'heukimja (black sesame) *juk*' (3.39), and 'sweet amber *juk*' (3.21), while females preferred 'mushroom and oyster *juk*' (3.63), 'sweet amber *juk*' (3.11), and 'shrimp *juk*' (3.09). In the category of retort *juk* sold in supermarkets or local shopping marts, the following order of preference was noted: 'green tea *juk*' (4.00), 'red bean *juk*' (3.36), and 'marine product *juk*' (3.11). For powder *juk* products sold in supermarkets or local shopping marts, both males and females preferred 'beef *juk*' ($p < 0.05$). Even though it was difficult to compare certain kinds of *juk* among the different categories of

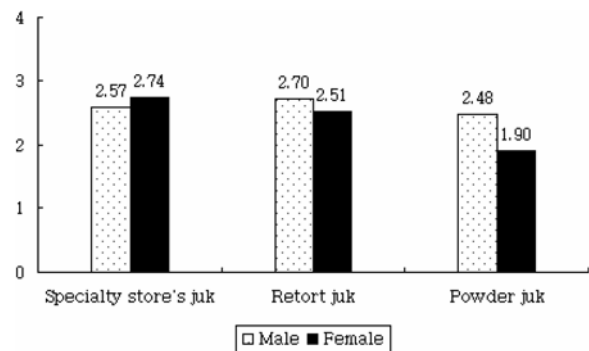


Fig 1. Preference toward commercial *juk* (porridge) production mode according to gender.

production mode, consumers seem to prefer purchasing 'sweet amber *juk*' as a specialty store item (3.21 or 3.11) rather than as retort *juk* (2.22 or 2.31). However, consumers preferred to buy vegetable *juk* as a powder (2.66 or 1.48) rather than as a specialty store item (1.46 or 2.17). In the case of beef *juk*, there does not seem to be much difference by type of production mode between purchasing it as retort *juk* (2.95 or 2.39) or as powder *juk* (2.98 or 2.38). With regard to the respondents' preferences for types of commercial *juk* products, females did not offer a response for 'green tea *juk*' (retort *juk*), and males did not offer a response for 'marine product *juk*' (retort *juk*).

In a preference study based on the most common 8 types of *juk* (June et al 1998), red bean-, amber-, chicken-, and sea ear-*juk* were reported as the most preferred types by consumers, emphasizing a need for the development of those kinds of *juk* products in the future. Han and Lim (2007) also reported on the necessity to develop convenience forms of traditional Korean foods, with particular focus on rice, *juk*, and noodles.

Table 4. Preference for kinds of commercial *juk* (porridge) in different categories of production mode

Mean±SD

Production mode	Name of <i>juk</i>	Gender		t-value
		Male	Female	
Specialty store's <i>juk</i>	Marine Product <i>juk</i>	2.39±0.80	2.74±0.67	-2.279*
	Mushroom and oyster <i>juk</i>	1.56±0.91	3.63±0.79	-8.733***
	Shrimp <i>juk</i>	3.00±0.00	3.09±1.23	-0.130
	Beef and vegetable <i>juk</i>	2.33±0.63	2.57±0.83	-1.431
	Tuna and vegetable <i>juk</i>	2.56±0.71	2.48±1.07	0.365
	Vegetable <i>juk</i>	1.46±0.50	2.17±0.77	-5.183***
	Ginseng and chicken <i>juk</i>	1.57±0.61	2.99±0.78	-10.520***
	Sea ear <i>juk</i>	2.61±0.87	2.35±1.11	1.598
	Pinenut <i>juk</i>	3.03±0.73	2.70±0.60	2.617*
	<i>Heukimja</i> (black sesame) <i>juk</i>	3.39±0.82	2.33±0.96	7.910***
	Sweet amber <i>juk</i>	3.21±0.80	3.11±0.68	0.89
	Red bean <i>juk</i>	3.76±0.66	2.77±0.83	7.224***
Supermarket or mart's retort <i>juk</i>	Sea ear <i>juk</i>	2.74±0.64	2.35±0.89	2.668**
	Tuna <i>juk</i>	2.27±0.46	2.54±0.66	0.16
	Beef <i>juk</i>	2.95±1.17	2.39±1.13	2.354*
	Marine product <i>juk</i>	-	3.11±0.57	-
	Vegetable <i>juk</i>	2.85±0.54	1.95±0.54	5.097***
	Ginseng and Chicken <i>juk</i>	2.21±0.99	2.35±1.11	-0.629
	Sweet red-bean <i>juk</i>	2.19±1.07	2.47±1.14	-1.351
	Sweet amber <i>juk</i>	2.22±0.58	2.31±0.93	-0.363
	Pinenut <i>juk</i>	2.23±0.96	2.73±0.53	-3.447**
Supermarket or mart's powder <i>juk</i>	Green tea <i>juk</i>	4.00±0.00	-	-
	Red bean <i>juk</i>	3.36±0.91	2.91±0.35	3.444**
	Pine nut <i>juk</i>	1.79±0.95	1.84±0.12	-0.302
	Beef <i>juk</i>	2.98±0.92	2.38±0.96	2.194*
	Vegetable <i>juk</i>	2.66±0.81	1.48±0.87	7.090***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

-: Not answer

Likert 4-point scale (1=Not delicious 2=Little delicious 3=Delicious 4=Very delicious)

Table 5. Necessity of quality improvements in commercial *juk* (porridge) by gender and age

N(%)

Variable	Very necessary	Necessary	Not necessary	Total	χ^2 -value
Gender					
Male	45(22.7)	122(61.6)	31(15.7)	198(46.9)	0.733
Female	56(25.0)	139(62.1)	29(12.9)	224(53.1)	
Age(yrs)					
20~29	15(15.0)	78(78.0)	7(7.0)	100(23.7)	73.917***
30~39	29(31.5)	30(32.6)	33(35.9)	92(21.8)	
40~49	32(35.2)	57(62.6)	2(2.2)	91(21.6)	
≥50	25(18.0)	96(69.1)	18(12.9)	139(32.9)	
Total	101(23.9)	261(61.8)	60(14.2)	422(100.0)	

*** $p < 0.001$

Likert 4-point scale (1=Not delicious 2=Little delicious 3=delicious 4=Very delicious)

Quality improvement of commercial *juk*

Table 5 presents the necessary quality improvements for

commercial *juk* according to the surveyed consumers.

Regardless of gender, 85.7% of the respondents felt that

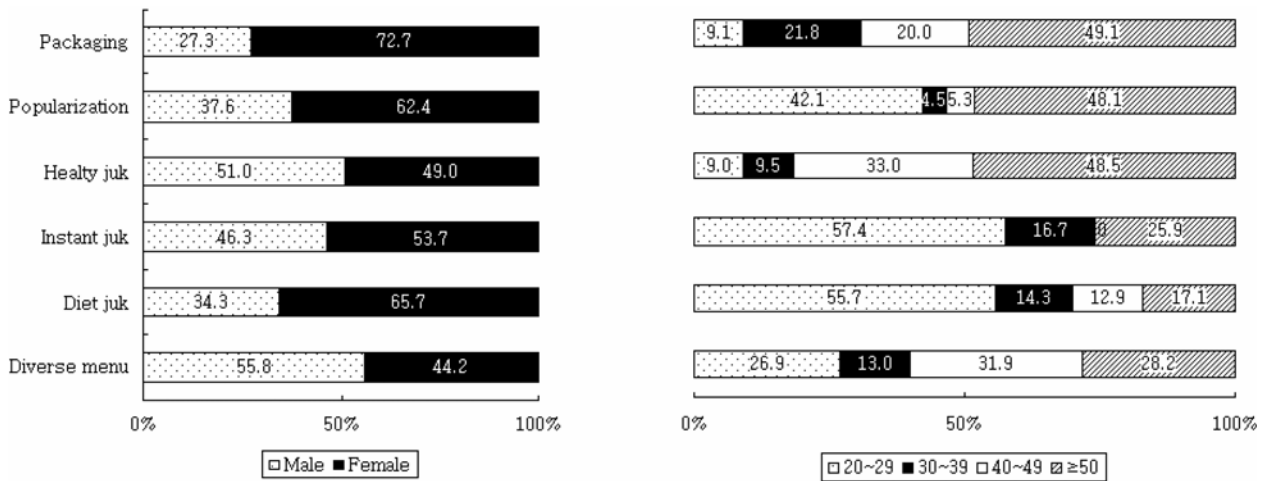


Fig 2. Areas of quality improvement for commercial *juk* (porridge) by gender and age.

quality improvements of commercial *juk* were ‘very necessary’ (23.9%) and ‘necessary’ (61.8%). Based on age, all age groups responded highly that quality improvements were ‘very necessary’ or ‘necessary’, except for those in their 30’s ($p < 0.001$) where one-third (35.9%) noted it as ‘not necessary’.

With regard to types of quality improvements (Fig 2), female respondents emphasized improvements of the ‘packaging container’ more than male respondents ($p < 0.01$). Furthermore, females were more interested in ‘diet *juk*’ (65.7%) and ‘packaging’ (72.3%) while males showed more interest in ‘diverse *juk* products’ (55.8%). When examining the results by age group, all age groups responded differently in each improvement area. For example, those in their 20’s emphasized ‘diet *juk*’ (55.7%) and ‘instant *juk*’ (57.4%), while those in their 40’s emphasized ‘healthy *juk*’ (33%) and ‘diverse product choices’ (31.9%), and those in their 50’s considered ‘healthy *juk*’ (48.5%), ‘mass popularization’ (48.1%) and ‘packaging container’ (49.1%) as areas of improvement. In a survey of consumers for deriving the superior factors pertaining to various traditional Korean foods (Jang et al 2005), ‘nutrition’ was reported as the most important factor for the development of modernized traditional Korean foods. Finally, the current survey also indicates that the development of healthy *juk* is one of most important improvement factors, along with the development of diverse product choices.

In conclusion, a high percentage (85.7%) of the total respondents noted that commercial *juk* quality improvements were desirable, and they specifically pointed out possible improvement in the areas of ‘diverse product choices’ and ‘healthy *juk*’; therefore, one can conclude that increase in *juk* consumption, as well as further diversification of commercial *juk* products, would be realized by making such improvements.

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