Consumer Behavior and Perception of Ginseng Products by Different Age Groups

Na Young Kim[1], Myung Joo Han[2]*

[1]*Department of Hotel Culinary Art, Songho College*
[2]*Department of Food and Nutrition, Kyung Hee University*

Abstract

This study investigated the perception, consumer pattern and satisfaction of the ginseng products of 600 people in the Seoul area surveyed from Feb. 1 to 28, 2011. The perception and satisfaction tests were performed using a 5-point scale (1 = disagree (dissatisfy) very much, 5 = agree (satisfy) very much. People perceived ginseng to have refreshment (3.86), immuno-modulation (3.78), anticancer (3.51), and antiaging (3.41) properties. People in their 20s (4.02) scored high on refreshment compared to people in their 60s and over (3.73). Most people (79.8%) consume ginseng products and prefer red ginseng (74.3%). More people in their 40s (54.1%) and 50s (48.2%) consume ginseng products for refreshment than people in their 20s (38.7%), 30s (41.5%) or 60s and over (40.0%). However, more people in their 50s (36.1%) and 60s and over (43.6%) consume ginseng products for disease prevention than people in their 20s (8.6%). Most people (66.4%) take ginseng all year round. People in their 20s (2.70) showed a smaller satisfaction score of the taste of ginseng products than those in their 30s (3.21), 40s (3.23), 50s (3.26) and 60s and over (3.38).

Key Words: Perception, satisfaction, ginseng product, refreshment, disease prevention

I. Introduction

Ginseng (*Panax ginseng*) is one of the most widely used herbal medicines and has been used as a tonic sedative agent in Asia for thousands of years (Ernst 2010; Qi et al. 2010; Kim et al. 2010). The scientific name of ginseng is *Panax ginseng*, given in 1843 by Carl Anton Meyer. The genus name, Panax, means 'cure (pan) all (axos)' in Greek, and the species name, ginseng, means 'human-shaped essence of the earth' in Chinese. The meaning of *Panax ginseng* is 'all-healing man herb' (Kim 2007; Lee et al. 2011).

Ginseng, special crop in Korea, has been exported to the world market for a long time (Jeong et al. 2005). Ginseng has been reported to have immuno-modulation, vasorelaxation, antioxidation, antiinflammation, antidiabetes, antiaging, antistress and anticancer activities (Yun 1996; Yun 2001; Hasegawa et al. 2002; Helms 2004). The major bioactive constituents of ginseng are ginsenoside and polysaccharides (Qi et al. 2010; Kim 2007). Ginseng, which contains a protopanaxadiol group (Ra, Rb1, Rb2, Rc, and Rs) and a protopanaxatriol group (ginsenoside Rg1, Re, Rf, and Rg2), has been used as a traditional medicine in Korea, China, and Japan (Kim & Park 1998; Kim 2007).

Traditionally, ginseng is prepared by several different ways in Korea, such as fresh ginseng, white ginseng and red ginseng. Fresh ginseng is less than 4 years old; white ginseng is 4 to 6 years old and is dried after peeling; red ginseng is harvested when it is 6 years old and is steamed and then dried (Ernst 2010).

The objectives of this study were to identify perception and consumer behavior of ginseng product in different age for the development of various ginseng products.

II. Materials and Methods

1. Research subjects and period

This study involved 600 people in Seoul area and surveyed during Feb. 1 to 28, 2011.

2. Survey questionnaire

The survey consisted of the opinions related to health (5 items), perception about ginseng (10 items), route to get information, intake of ginseng product (6 items), satisfaction of ginseng products (5 items) and opinion about ginseng product (2 items). The opinion related to health, perception and satisfaction of ginseng products were measured by using

---

*Corresponding author: Myung Joo Han, Department of Food and Nutrition, Kyung Hee University, 1 Hoegidong, Dongdaemungu, Seoul 130-701, Korea
Tel: +82-2-961-0553   Fax: +82-2-961-0261   E-mail: mjhan@khu.ac.kr

5-point scale (1=disagree (dissatisfy) very much, 5=agree (satisfy) very much).

3. Statistical analysis

The survey data were analyzed to frequency (%) and mean ±SD by using SAS program. The significant differences were measured by χ^2-test and analysis of variance (ANOVA). The result of ANOVA show significance, then mean separation applied by duncan's multiple range test.

III. Results and Discussion

1. General characteristics of subjects

The subjects are consisted of female 268 (48.7%) and male 282 (51.3%) <Table 1>. By age, people in their 20s were 122 (22.2%), 126 at 30s (22.9%), 135 at 40s (24.6%), 103 at 50s (18.7%) and over 64 at 60s (11.6%). Most people (68%) have a monthly income of less than three million won. The 111 people (18.5%) have a monthly income of more than four million won. By academic level, 349 people (63.3%) in University graduate were the largest group, followed by 146 people (26.6%) in high school graduate. The number of nuclear family households were 485 (88.2%), those of large family were 65 (11.8%).

2. Opinions related to health condition

The opinions related to health condition by age is shown in <Table 2>. The opinion related to health condition were 'eat regularly' (3.32), 'feel healthy' (3.26), 'sufficient sleep' (3.12), 'get rid of stress' (2.61), 'exercise regularly' (2.59) in decreasing order. There are significant differences on

<Table1> General characteristics of subjects   N(%)

Characteristics	
Gender	
Male	268(48.7)
Female	282(51.3)
Age	
20 ≤ age < 30	122(22.2)
30 ≤ age < 40	126(22.9)
40 ≤ age < 50	135(24.6)
50 ≤ age < 60	103(18.7)
60 ≤	64(11.6)
Income (10,000won)	
<100	144(26.2)
100 ≤ income < 200	121(22.2)
200 ≤ income < 300	109(19.8)
300 ≤ income < 400	62(11.3)
400 ≤ income < 500	49(8.9)
500 ≤	53(9.6)
Education level	
Elementary school	12(2.2)
Middle school	14(2.6)
High school	146(26.6)
University	349(63.5)
Graduate school	29(5.3)
Family	
Mono family	485(88.2)
Multi family	65(11.8)
Total	550(100)

'exercise regularly', 'eat regularly', 'get rid of stress' and 'sufficient sleep' by age group. People in their over 60s (2.91) showed high score in 'exercise regularly' compared to their 20s (2.45) and 40s (2.40). People in their 30s (3.31), 40s (3.38), 50s (3.54), over 60s (3.63) showed high score on 'eat regularly' compared to their 20s (2.90). People in their 40s

<Table 2> The opinions[1] related to health conditions   Mean±SD

Characteristics	20 ≤ age < 30 (N=122)	30 ≤ age < 40 (N=126)	40 ≤ age < 50 (N=135)	50 ≤ age < 60 (N=103)	60 ≤ (N=64)	Total
Recognize healthy	3.36±0.96	3.23±0.80	3.21±0.72	3.33±0.77	3.14±0.87	3.26±0.82
	F=1.12 (p=0.3469)					
Exercise regularly	2.45±1.16[bc]	2.64±1.10[abc]	2.40±1.01[c]	2.74±1.03[ab]	2.91±1.12[a]	2.59±1.09
	F=3.46 (p=0.0083)					
Eat regularly	2.90±1.05[c]	3.31±1.03[b]	3.38±0.90[ab]	3.54±1.09[ab]	3.63±0.75[a]	3.32±1.01
	F=8.43 (p<0.0001)					
Get rid of stress	2.49±0.87[bc]	2.40±0.85[c]	2.70±0.86[ab]	2.72±0.75[ab]	2.89±0.94[a]	3.39±0.86
	F=4.97 (p=0.0006)					
Sufficient sleep	3.00±1.03[bc]	2.93±0.95[c]	3.20±0.85[abc]	3.25±0.97[ab]	3.34±1.03[a]	3.12±0.98
	F=3.25 (p=0.0120)					

[1]1=disagree very much, 5=agree very much
a,b,cMeans in a row followed by different superscripts are significantly different at p<0.05

<Table 3> Perception[1] on the biological activity of ginseng   Mean±SD

Characteristics	20 ≤ age < 30 (N=122)	30 ≤ age < 40 (N=126)	40 ≤ age < 50 (N=135)	50 ≤ age < 60 (N=103)	60 ≤ (N=64)	Total
Immune-modulation	3.87±0.68	3.74±0.69	3.80±0.78	3.77±0.78	3.67±0.86	3.78±0.75
			F=0.89 (p=0.4688)			
Refreshment	4.02±0.70[a]	3.81±0.67[b]	3.84±0.67[ab]	3.84±0.68[ab]	3.73±0.76[b]	3.86±0.69
			F=2.49 (p=0.0423)			
Antiaging	3.25±0.88	3.37±0.69	3.44±0.83	3.55±0.78	3.47±0.82	3.41±0.81
			F=2.34 (p=0.0539)			
Anticancer	3.43±0.87	3.41±0.78	3.55±0.82	3.61±0.79	3.63±0.65	3.51±0.80
			F=1.56 (p=0.1844)			
Adjustment of blood pressure	2.93±0.92	3.02±0.76	2.93±0.79	2.91±0.88	2.91±0.85	2.95±0.84
			F=0.37 (p=0.8278)			
Antidiabetic	3.00±0.84	3.03±0.73	3.16±0.90	2.89±0.88	2.98±0.72	3.02±0.83
			F=1.56 (p=0.1823)			
Restore stamina	3.37±0.91	3.26±0.80	3.24±0.81	3.17±0.87	3.22±0.70	3.2±0.836
			F=0.86 (p=0.4892)			
Protecting liver function	3.11±0.86	3.13±0.83	3.34±0.85	3.25±0.75	3.09±0.81	3.20±0.83
			F=1.84 (p=0.1205)			
Stress reduction	2.61±0.98[b]	2.82±0.82[ab]	3.05±0.87[a]	3.02±0.85[a]	2.95±0.79[a]	2.88±0.89
			F=5.24 (p=0.0004)			
Good for memory	2.85±0.92[b]	2.94±0.83[ab]	3.15±0.83[a]	3.08±0.83[ab]	3.19±0.71[a]	3.03±0.85
			F=3.06 (p=0.0165)			

[1]1=disagree very much, 5=agree very much
[a,b]Means in a row followed by different superscripts are significantly different at $p<0.05$

(2.70), 50s (2.72), and over 60s (2.89) showed high score on 'get rid of stress' compared to their 20s (2.49) and 30s (2.40). People in their in over 60s (3.34) showed high score on 'sufficient sleep' compared to their 20s (3.00) and 30s (2.93). By increasing age, 'exercise regularly', 'eat regularly', 'get rid of stress' and 'sufficient sleep' showed moderate rise. However, 'exercise regularly' (2.59) and 'get rid of stress' (2.61) showed poor opinion in all age groups.

3. Perception on the biological activity of Ginseng

The perception on the biological activity of ginseng by age is shown in <Table 3>. The perception on 10 biological activities of ginseng was measured by 5-point scale. People perceived ginseng to have 'refreshment' (3.86), 'immuno-modulation' (3.78), 'anticancer' (3.51), 'antiaging' (3.41), 'restore stamina' (3.26), 'protecting liver function' (3.20), 'good for memory' (3.03), 'antidiabetic' (3.02), 'adjustment of blood pressure' (2.95) and 'stress reduction' (2.88) in decreasing order. 'Adjustment of blood pressure' and 'stress reduction' among 10 biological activities of ginseng marked

less then 3. There is a significant difference on 'refreshment', 'stress reduction', 'good for memory' by age group. People in their 20s (4.02) showed high score on 'refreshment' compared to their over 60s (3.73). There are no difference on 'refreshment' in their 30s (3.81), 40s (3.84), 50s (3.84) and over 60s (3.73). People in their 20s (2.61) showed low score on 'stress reduction' compared to their 40s (3.05), 50s (3.02), and over 60s (2.95). People in their 20s (2.85) showed low score on 'good for memory' compared to over 60s (3.19).

Accordin to this result, most people recognize ginseng to have 'refreshment' and 'immuno-modulation' activities. Ginseng (*Panax ginseng*) is one of the most widely used herbal medicines and has been used as a restorative tonic in China, Japan, and Korea for thousand years (Qi et al. 2010). The 74% of college student recognized ginseng as a health food (Sung et al. 1989).

The route to get information about ginseng is shown in <Table 4>. Most people (59.3%) get information about ginseng by news media and then 23.5% by friends. There is a significant difference to get information about ginseng by

<Table 4> The Route to get information about ginseng   N(%)

Characteristics	20age < 30	30age < 40	40age < 50	50age < 60	60	Total	
News media (TV, newspaper, radio)	87(71.3)	58(47.8)	78(58.2)	58(56.3)	42(65.6)	323(59.3)	
Book	1(0.8)	6(4.9)	2(1.5)	5(4.9)	1(1.6)	15(2.8)	df=16
Internet	15(12.3)	22(18.0)	20(14.9)	7(6.8)	1(1.6)	65(11.9)	χ^2=35.45
Friends	18(14.8)	32(26.2)	30(22.4)	31(30.1)	17(26.6)	128(23.5)	p=0.0034
Other	1(0.8)	4(3.3)	4(3.0)	2(1.9)	3(4.7)	14(2.6)	
Total	122(22.4)	122(22.4)	134(24.6)	103(18.9)	64(11.7)	545(100)	

<Table 5> Intake of ginseng products   N(%)

Characteristics	20age < 30	30age < 40	40age < 50	50age < 60	60	Total	
Intake of Ginseng							
Yes	93(76.2)	96(76.2)	110(81.5)	85(82.5)	55(85.9)	439(79.8)	df=4
No	29(23.8)	3.0(23.8)	25(18.5)	18(17.5)	9(14.1)	111(20.2)	χ^2=4.1925
Total	122(22.2)	126(22.9)	135(24.6)	103(18.7)	64(11.6)	550(100)	p=0.3806
Reason for not taking							
Not necessary	6(21.4)	8(26.7)	7(28.0)	4(23.5)	2(22.2)	27(24.80	
Dislike taste	4(14.3)	2(6.7)	3(12.0)	3(17.7)	1(11.1)	13(11.9)	
Price	1(3.6)	2(6.7)	6(24.0)	2(11.8)	1(11.1)	12(11.0)	df=20
No opportunity	13(46.4)	8(26.7)	3(12.0)	0(0.0)	3(33.3)	27(24.8)	χ^2=30.1741
Physical constitution	3(10.7)	10(33.3)	5(20.0)	5(29.4)	1(11.1)	24(22.0)	p=0.0671
Other	1(3.6)	0(0.0)	11(4.0)	3(17.7)	1(11.1)	6(5.5)	
Total	28(25.7)	30(27.5)	25(22.9)	17(15.6)	9(8.3)	109(100)	
Reason for taking							
Refreshment	36(38.7)	39(41.5)	59(54.1)	4(48.2)	22(40.0)	196(45.2)	
Treatment purpose	1(1.1)	0(0.0)	0(0.0)	3(3.6)	0(0.0)	4(0.9)	df=16
Disease prevention	8(8.6)	21(22.3)	21(19.3)	30(36.1)	24(43.6)	104(24.0)	χ^2=70.8031
Friend's suggestion	43(46.2)	29(30.9)	21(19.3)	9(10.8)	9(16.4)	111(25.6)	p<0.0001
Other	5(5.4)	5(5.3)	8(7.3)	1(1.2)	0(0.0)	15(3.5)	
Total	93(21.4)	94(21.7)	109(25.1)	83(19.1)	55(12.7)	434(100)	

age group. More people in their 20s (71.3%) get information about ginseng by news media than their 30s (47.8%), 40s (58.2%), 50s (56.3%) and over 60s (65.6%). More people in their 30s (26.2%), 40s (22.4%), 50s (30.1%) and over 60s (26.6%) get information about ginseng by friends than their 20s (14.8%).

4. Consumption patterns of ginseng products

Intake of ginseng product by age is shown in <Table 5>. This study showed most people (79.8%) consumed ginseng product. Reason for taking ginseng product were 'refreshment' (45.2%), 'friend's suggestion' (25.6%), 'disease prevention' (24.0%), 'other' (3.5%), 'treatment purpose' (0.9%) in decreasing order. There is a significant difference to the reason for taking ginseng product. by age. More people in their 40s (54.1%) and 50s (48.2%) consumed ginseng product for 'refreshment' than their 20s (38.7%), 30s

(41.5%) and over 60s (40.0%). However, more people in their 50s (36.1%) and over 60s (43.6%) consumed ginseng product for disease prevention than their 20s (8.6%), 30s (22.3%) and 40s (19.3%). More people in their 20s (46.2%) and 30s (30.9%) consumed ginseng product for 'friend's suggestion' than their 40s (19.3%), 50s (10.8%), over 60s (16.4%). Reason for not taking ginseng product were 'not necessary' (24.8%), 'no opportunity' (24.8%), 'physical constitution' (22.0%), 'dislike taste' (11.9%), 'price' (11.0%). There is no significant difference on the reason for not taking ginseng product by age. Lee et al. (2011) reported that 83.2% of respondents have taking experience of health food in the past year and reason for not taking health food was 'not necessary' (60.0%) and 'questionable effect' (16.1%).

The favorite type of ginseng by age is shown in <Table 6>. The favorite type of ginseng were 'red ginseng' (74.3%), 'fresh ginseng' (22.2%), 'white ginseng' (3.3%) and 'black

<Table 6> The favorite type of ginseng and ginseng products   N(%)

Characteristics	20age < 30	30age < 40	40age < 50	50age < 60	60	Total	
Type of ginseng							
Fresh ginseng	22(25.0)	12(12.9)	19(17.8)	14(17.1)	27(50.0)	94(22.2)	
White ginseng	5(5.7)	3(3.20)	3(2.8)	3(3.7)	0(0.0)	14(3.3)	df=12
Red ginseng	61(69.3)	78(88.9)	84(78.5)	65(79.3)	27(50.0)	315(74.3)	χ^2=37.3146
Black ginseng	0(0.0)	0(0.0)	1(0.9)	0(0.0)	0(0.0)	1(0.2)	p=0.0002
Total	88(20.8)	93(21.9)	107(25.2)	82(19.3)	54(12.7)	424(100)	
Type of ginseng product							
Fresh	3(3.9)	6(7.1)	11(10.1)	11(13.8)	13(23.6)	44(10.9)	
Extract	37(48.1)	48(57.1)	61(56.0)	39(48.8)	23(41.8)	208(51.4)	df=24
Candy	17(22.1)	7(8.3)	8(7.3)	6(7.5))	4(7.3)	42(10.4)	χ^2=37.9269
Preserved with honey	6(7.8)	5(6.0)	7(6.4)	2(2.5)	4(7.3)	24(5.9)	p=0.0353
Tablet	10(13.0)	12(14.3)	12(11.0)	15(18.8)	8(14.6)	57(14.1)	
Beverage	4(5.2)	6(7.1)	9(8.3)	5(6.3)	2(3.6)	26(6.4)	
Other	0(0.0)	0(0.0)	1(0.9)	2(2.5)	1(1.8)	4(1.0)	
Total	77(19.0)	84(20.7)	109(26.5)	80(19.8)	55(13.6)	405(100)	

<Table 7> The season to intake ginseng   N(%)

Charateristics	20age < 30	30age < 40	40age < 50	50age < 60	60	Total	
Spring	2(2.2)	2(2.1)	7(6.4)	2(2.4)	2(3.6)	15(3.4)	
Summer	8(8.6)	9(9.4)	8(7.3)	4(4.8)	2(3.6)	31(7.1)	df=16
Fall	3(3.2)	4(4.2)	7(6.4)	9(10.7)	7(12.7)	30(6.9)	χ^2=18.2669
Winter	11(11.8)	16(16.7)	20(18.4)	17(20.2)	7(12.7)	71(16.3)	p=0.3085
All seasons	69(74.2)	65(67.7)	67(61.5)	52(61.9)	37(67.3)	290(66.4)	
Total	93(21.3)	96(22.0)	109(24.9)	84(19.2)	55(12.6)	437(100)	

ginseng' (0.2%). There is a significant difference on the favorite type of ginseng by age. More people in their over 60s (50%) favor fresh ginseng than their 20s (25.0%), 30s (12.9%), 40s (17.8%). and 50s (17.1%). More people in their 20s (69.3%), 30s (88.9%), 40s (78.5%). and 50s (79.3%) favor red ginseng than their over 60s (50.0%). The favorite type of ginseng product were 'extract' (51.4%), 'tablet' (14.1%), 'fresh' (10.9%), 'candy' (10.4%), 'beverage' (6.4%) and 'preserved with honey (5.9%). There is a significant difference on the favorite type of ginseng products by age. More people in their over 60s (23.6%) favor 'fresh ginseng product' than their 20s (3.9%), 30s (7.1%), 40s (10.1%). and 50s (13.8%). More people in their 30s (57.1%) and 40s (56.0%) favor 'extract type' than 20s (48.1), 30s (57.1%), 50s (48.8%) and over 60s (41.8%). More people in their 20s (22.1%) favor 'candy type' than their 30s (8.3%), 40s (7.3%), 50s (7.5%) and over 60s (7.3%). The season to take ginseng were 'all season' (66.4%), 'winter' (16.3%), 'summer' (7.1%), 'fall' (6.9%) and 'spring' (7.1%). There is no significant difference on the season to take ginseng by age.

5. Satisfaction of ginseng product

Satisfaction of ginseng product by age is shown in <Table 8>. People satisfied to ginseng products on 'health promotion effect' (3.42), 'variety' (3.24), 'packaging unit' (3.15), 'taste' (3.13), 'price' (2.66) in decreasing order. There is a significant difference on taste of ginseng product by age group. People in their 20s (2.70) showed less satisfaction score on 'taste' of ginseng products than those in their 30s (3.21), 40s (3.23), 50s (3.26) and over 60s (3.38). Housewives in their 20s and 30s had low preference on taste of ginseng product compared to over 40s (Sung et al. 1989). There is no significant difference on the satisfaction of health promotion effect, variety, price and packaging unit of ginseng product by age.

Proper price of ginseng product by age is shown in <Table 9>. People consider proper price of ginseng product as '50,000 ≤ price < 100,000' (48.0%), '100,000 ≤ price < 150,000' (30.3%), '< 50,000' (12.5%), '150,000 ≤ price < 200,000' (6.9%), '200,000 ≤' (2.2%) in decreasing order. There is a significant difference on the proper price of ginseng by age. More people in their 20s (50.9%) and

<Table 8> Satisfaction[1] of ginseng products　　　　　　　　　　　　　　　　　　　　　　　　　Mean±SD

Characteristics	20 ≤ age < 30 (N=122)	30 ≤ age < 40 (N=126)	40 ≤ age < 50 (N=135)	50 ≤ age < 60 (N=101)	60 ≤ (N=64)	Total
Health promotion effect	3.40±0.73	3.37±0.69	3.52±0.75	3.38±0.75	3.44±0.71	3.42±0.73
			F=0.92 (p=0.4536)			
Taste	2.70±0.93[b]	3.21±0.84[a]	3.23±0.75[a]	3.26±0.72[a]	3/38±0.70[a]	3.13±0.84
			F=11.85 (p<0.0001)			
Variety of product	3.12±0.78	3.28±0.69	3.29±0.80	3.25±0.71	3.30±0.68	3.24±0.74
			F=1.09 (p=0.3631)			
Price	2.49±0.76	2.71±0.79	2.71±0.86	2.70±0.81	2.75±0.69	2.66±0.80
			F=1.89 (p=0.1110)			
Packaging unit	3.05±0.79	3.18±0.61	3.17±0.74	3.29±0.77	3.05±0.57	3.15±0.71
			F=2.07 (p=0.0836)			

[1]1= dissatisfy very much, 5= satisfy very much
[a,b]Means in arrow followed by different superscripts are significantly different at p<0.05

<Table 9> Proper price of ginseng product　　　　　　　　　　　　　　　　　　　　　　　　　N(%)

Characteristics	20age < 30	30age < 40	40age < 50	50age < 60	60	Total	
Price (1000won)							
< 50	20(17.0)	8(6.7)	18(13.4)	10(9.9)	11(17.7)	67(12.5)	
50 ≤ price < 100	60(50.9)	71(59.2)	48(35.8)	50(49.5)	28(45.2)	257(48.0)	df=16
	31(26.3)	32(26.7)	46(34.3)	34(33.7)	19(30.7)	162(30.3)	χ^2=32.4078
150 ≤ price < 200	4(3.4)	9(7.5)	16(11.9)	6(5.9)	2(3.2)	37(6.9)	P=0.0097
200 ≤	3(2.5)	0(0.0)	6(4.5)	1(1.0)	2(3.2)	12(2.2)	
Total	118(22.1)	120(22.4)	134(25.1)	101(18.9)	62(11.6)	525(100)	

<Table 10> Considering factor to buy ginseng product

Characteristics	20age < 30	30age < 40	40age < 50	50age < 60	60	Total	
Health promotion effect	55(47.4)	45(37.8)	49(37.4)	49(48.5)	31(50.8)	229(43.4)	
Price	6(5.2)	12(10.1)	9(6.9)	7(6.9)	8(13.1)	42(8.0)	df=16
Brand	42(36.2)	52(43.7)	64(48.9)	42(41.60	22(36.1)	222(42.1)	χ^2=24.7996
Type of product	12(10.3)	10(8.4)	7(5.3)	3(3.0)	0(0.0)	32(6.1)	p=0.0734
Packaging unit	1(0.9)	0(0.0)	2(1.5)	0(0.0)	0(0.0)	3(0.6)	
Total	116(22.0)	119(22.5)	131(24.8)	101(19.1)	61(11.6)	528(100)	

30s(59.2%) consider proper price of ginseng product as '50,000 ≤ price < 100,000' than their 40s (35.8%), 50s (49.5%), over 60s (45.2%). More people in their 40s (34.3%), 50s (33.7%) and over 60s (30.7%) consider proper price of ginseng product as '100,000 ≤ price < 150,000' than their 20s (26.3%) and 30s (26.7%). Considering factor to buy ginseng product by age is shown in <Table 10>. There are no significant differences on the considering factors to buy ginseng product by age. 'Health promotion effect' (43.4%) and 'brand' (42.1%) are predominant considering factors to buy ginseng product.

IV. Summary and Conclusion

This study was performed to determine consumer behavior, perception and satisfaction of ginseng product by different age groups. Six hundred people in Seoul area were surveyed during Feb 1 to 28, 2011 and the results were summarized as follows.

1. The subject are consisted of female 268 (48.7%) and 282 (51.3%), and people in their 20s (22.2%), 30s (22.9%), 40s (24.6%), 50s (18.7%) and over 60s (11.6%).

2. People in their 20s (4.02) showed high score on

'refreshment' compared to their over 60s (3.73). People in their 20s (2.61) showed low score on 'stress reduction' compared to their 40s (3.05), 50s (3.02), and over 60s (2.95). People in their 20s (2.85) showed low score on 'good for memory' compared to over 60s (3.19).

3. More people in their 40s (54.1%) and 50s (48.2%) consumed ginseng product for 'refreshment' than their 20s (38.7%), 30s (41.5%) and over 60s (40.0%). However, more people in their 50s (36.1%) and over 60s (43.6%) consumed ginseng product for disease prevention than their 20s (8.6%), 30s (22.3%) and 40s (19.3%). More people in their 20s (46.2%) and 30s (30.9%) consumed ginseng product for 'friend's suggestion' than their 40s (19.3%), 50s (10.8%), over 60s (16.4%).

4. Fresh ginseng were more favorite type of ginseng among people in their over 60s (50%) than their 20s (25.0%), 30s (12.9%), 40s (17.8%). and 50s (17.1%). Red ginseng were more favorite type of ginseng among people in their 20s (69.3%), 30s (88.9%), 40s (78.5%). and 50s (79.3%) than their over 60s (50.0%).

5. People in their 20s (2.70) showed less satisfaction score on 'taste' of ginseng product than those in their 30s (3.21), 40s (3.23), 50s (3.26) and over 60s (3.38).

In conclusion, people perceived ginseng to have refreshment and immune-modulation activity. The most favorite type of ginseng and ginseng product are red ginseng and ginseng extract. Therefore, various types of red ginseng products should be developed in reasonable price and packaging unit.

References

Ernst E. 2010. *Panax ginseng*: an overview of the clinical evidence. J. Ginseng Res. 34(4):259-263

Hasegawa H, Suzuki R, Nagaoka T, Tezuka Y, Kadota S, Saiki I. 2002. Prevention of growth and metastasis of murine melanoma through enhanced natura-killer cytotoxicity by fatty acid-conjugate of protopanaxatriol. Biol. Pharm. Bull. 25(7):861-866

Helms S. 2004. Cancer prevention and therapeutics: *Panax ginseng*. Altern. Med Rev 9(3):259-274

Jeong HB, Park SH, Ko SK, Cho SH, Im BO. 2005. Actual consumption conditions and consumer perception of ginseng in the major countries. J. Ginseng Res 29(2):152-158

Kim DH. 2007. Understanding of ginseng and health. Hanrimwon Publishing, pp. 5-11.

Kim SK, Park JH. 1998. Improved method for the preparation of crude ginseng saponin. Korean J. Ginseng Sci. 22(1):155-16

Kim YH, Kim GH, Shin JH, Kim KS, Lim JS. 2010. Effect of Korean red ginseng on testicular tissue injury after torsion and detorsion. Korean J Urol 51( ):794-799

Lee OR, Sathiyaraj G, Kim YJ, In JG, Kwon WS, Kim JH, Yang DC. 2011. Defense gene induced by pathogens and abiotic stress in panax ginseng C.A. Meyer. J. Ginseng Res. 35(1):1-11

Lee JY, Chae SK, Kim KD. 2011.The perceptions and purchase intentions of health food consumers. Korean J. Food Preserv. 18(1):103-110

Qi F, Li A, Inagaki Y, Gao J, Li J., Kokudo N, Li XK, Tanf W. 2010. Chinese herbal medicines as adjuvant treatment during chemo- or radio-therapy for cancer. BioScience Trends 4(6):297-307

Sung HS, Yang JW, J BS, Kim NM, Kim YD. 1989. A study on preferences for ginseng in Korean. II. The college student's viewpoint. Korean J. Ginseng Sci. 13(1):130-135

Sung SS, Lee JT, Kim NM, Suh KB. 1989. A study on preferences for ginseng in Korean. I. The housewife's viewpoint. Korean J. Ginseng Sci. 13(1):123-129

Yun TK. 1996. Experimental and epidemiologic evidence of cancer preventive effect of *Panax ginseng* C. A. Meyer. Nutr. Rev. 54(11):71-81

Yun TK. 2001. *Panax ginseng* a non-organ-specific cancer preventive? Lancet Oncol. 2(1):49-54