Survey Analysis of Regional Name, Use and Availability of *Gnaphalium affine* at Jeonnam Province

Yun Jum Park¹, Yang Gyu Ku¹, Ho Cheol Kim¹, Ja Yong Cho², and Buk Gu Heo^{3*}

¹Department of Horticulture Industry, Wonkwang University, Iksan 54538, South Korea

²Department of Food Science and Biotechnology, Jeonnam Provincial College, Damyang 57337, South Korea

³Naju Foundation of Natural Dyeing Culture, Naju 58280, South Korea

Abstract

In order to establish basic data for the succession and development of use culture of *Gnaphalium affine*, a traditional rice cake plant resource, this study was carried out with a survey on 259 women aged 60 or over living 18 city and county in Jeonnam province. The results are summarized as follows. All respondents in the survey did not know the standard name of *Gnaphalium affine*. 178 respondents (68.7%) knew the plant name called in the local area. The frequency was higher in the order of Jebissuk (37.5%) > Gaessuk (21.2%) > Seorissuk (19.7%) > Gyessuk (4.3%) > Goissuk (1.9%), including duplicate responses. Of the 178 respondents who responded that they could distinguish it, 82.6% knew only one species, and 17.4% knew two in *Gnaphalium affine*. 62.3% of respondents said they ate dishes made from *Gnaphalium affine*, and 62.3% had experience cooking *Gnaphalium affine*. 61.8% of respondents said they ate rice cake made from *Gnaphalium affine*, and 40.2% had experience making rice cake with *Gnaphalium affine*. Edible taste of *Gnaphalium affine* was evaluated as 'delicious and sticy taste (4.75)' and 'above sticky (4.89)' according to criterion level 5.0. The final eating period was followed from 1951-1970 (33.1%) > 1971-1990 (29.4%) > 1991-2010 (17.5%) > after 2011 (13.8%) > before 1950 (10.0%), respectively. As a result, it is very necessary that the standard name of *Gnaphalium affine* is spread widely and the use culture is succeeded and active.

Key words : cottonweed, cudweed, jebissuk, seorissuk, traditional rice cake

I. Introduction

Gnaphalium affine belongs to the genus *Gnaphalium* of Compositae, widely distributed in East Asia such as Korea, Japan and China (Kim et al., 2014). In term of botany, *Gnaphalium affine* is an annual plant and germinated in the fall and entered into hibernation with its rosette leaves. In spring, stems are divided into many types from the root collar, growing up to about 15-50 cm (Heo, 2015). *Gnaphalium affine* has different name such as Goissuk, Somssuk and Jebissuk. Oriental medicine of the whole plant body is called Seogukcho except the root of *Gnaphalium affine*. The meaning of Seogukcho is implied that the white at the tip of the leaves is like a mouse's ear, and the small yellow flower is like chrysanthemum. It is used in China and Japan as the name of medicinal stuff and rice cake plant resource (Heo, 2015).

Gnaphalium affine as a medicinal herb is used to alleviate coughing, phlegm, asthma, bronchitis, muscle pain, lumbago, arthritis, prostatism, itchy skin, and high blood pressure (Xi et al., 2012), and also has an antibacterial effect (Pan, 2006). It was reported that *Gnaphalium affine* has functional component such as flavonoid (Aritomi and Kawasaki, 1974; Morimoto et al., 2000.), phenolic compounds (Shikova et al., 2010), essential oil (Zeng et al., 2011), diterpenes (Meragelman et al., 2003) and other compounds (Im et al., 2015).

In Korea, *Gnaphalium affine* has had various regional names and been used a rice cake plant in some regions, but there is not existed. Moreover, history and use method of *Gnaphalium affine* is slowly being disappeared because of old people death using the plant. However, research on *Gnaphalium affine* in Korea only deals with the nutritive components and amino acids (Heo, 2015), the antioxidant effect (Kim et al., 2015), analysis of antioxidant activity components (Kim et al., 2014) and anti-inflammatory effect (Kim, 2015).

Thus, this study will provided basic information for efficient management and development of traditional cultural knowledge

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*Corresponding author: bukgu@naver.com

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of *Gnaphalium affine* by investigating the perception level of the plant, its regional name, use and availability among the elderly living in each city and county of Jeonnam.

II. Research method

1. Survey period, subject and region

The survey for this study was conducted from January 2014 to October 2016. Participants were total 259 women aged 60 or older than 60 in 18 cities and counties of Jeonnam province (Table 1). The survey regions were selected based on whether they can represent the characteristics of each city and county: Dasi-myeon, Munpyeong-myeon and Dado-myeon in Naju city, Seongjeon-myeon in Gangjin county, Damyang-eup and Mujeong-myeon in Damyang county, Gunnam-myeon and Bulgap-myeon in Yeonggwang county, Nasan-myeon in Hampyeong county, Gurye-eup and Yongbang-myeon in Gurye county, Donggang-

myeon in Goheung county, Mundeok-myeon and Bongnae-myeon in Boseong county, Juam-myeon in Suncheon city, Gwansan-eup and Hoejin-myeon in Jangheung county, Gokseong-eup and Gyeom-myeon in Gokseong county, Gygok-myeon and Munnae-myeon in Haenam county, Samseo-myeon in Jangseong county, Bonggang-myeon in Gwangyang city, Illo-eup and Mongtan-myeon in Muan county, Noan-myeon and Bogil-myeon in Wando county, Dong-myeon and Dongbok-myeon in Hwasun county, and Cheongsan 2-gu in Yeosu city.

2. Survey method

The preliminary survey showed that *Gnaphalium affine* had different regional names, and thus the photos of *Gnaphalium affine* was printed in color as shown in Fig. 1. Responders were read the question paper and they answered each survey question. The researchers directly marked the answers given by responders.

Table 1. Province, age and number of people of surveyed respondent used in this study.

Area	Number of respondent by a kind of regional dialect (%)				Total
	Sixty	Seventy	Eighty	Ninety	
Naju	1 (6.7 ^z)	5 (33.3)	8 (53.3)	1 (6.7)	15 (100)
Gangjin	4 (28.6)	2 (14.3)	5 (35.7)	3 (21.4)	14 (100)
Damyang	2 (13.3)	6 (40.0)	6 (40.0)	1 (6.7)	15 (100)
Yeonggwang	4 (22.2)	6 (33.3)	8 (44.4)	0 (0.0)	18 (100)
Hampyeong	4 (25.0)	6 (37.5)	5 (31.3)	1 (6.3)	16 (100)
Gurye	2 (14.3)	4 (28.6)	6 (42.9)	2 (14.3)	14 (100)
Goheung	2 (18.2)	3 (27.3)	4 (36.4)	2 (18.2)	11 (100)
Boseong	2 (20.0)	3 (30.0)	5 (50.0)	0 (0.0)	10 (100)
Suncheon	3 (18.8)	7 (43.8)	6 (37.5)	0 (0.0)	16 (100)
Jangheung	4 (23.5)	5 (29.4)	5 (29.4)	3 (17.6)	17 (100)
Gokseong	2 (15.4)	3 (23.1)	6 (46.2)	2 (15.4)	13 (100)
Haenam	2 (13.3)	5 (33.3)	7 (46.7)	1 (6.7)	15 (100)
Jangseong	2 (13.3)	3 (20.0)	8 (53.3)	2 (13.3)	15 (100)
Gwangyang	3 (20.0)	4 (26.7)	6 (40.0)	2 (13.3)	15 (100)
Muan	3 (23.1)	3 (23.1)	6 (46.2)	1 (7.7)	13 (100)
Wando	2 (18.2)	3 (27.3)	5 (45.5)	1 (9.1)	11 (100)
Hwasun	4 (25.0)	3 (18.8)	9 (56.3)	0 (0.0)	16 (100)
Yeosu	4 (26.7)	4 (26.7)	5 (33.3)	2 (13.3)	15 (100)
Total	50 (19.3)	75 (28.9)	110 (42.5)	24 (9.3)	259 (100)

^zThe proportion of respondents.

Fig. 1. Photos of *Gnaphalium affine* used in this study.

3. Survey items and contents

1) Name of *Gnaphalium affine*

Photos of *Gnaphalium affine* (Fig. 1) were shown to the respondents, and they were to answer whether they know the existence of the plant and the name, which were marked in the questionnaire. In this process, the regional name Jebissuk varied among regions, such as Jebussuk, Jibissuk, Jebutssuk and Jibutssuk, which were all categorized as Jebissuk for consistency. However, Gaessuk, Gyessuk and Goissuk were all distinguished, because they have different meanings. 178 respondents had two and more response about question, excluding 81 respondents (31.35%) who did not know the existence of *Gnaphalium affine* among total 259 respondents.

2) Number of types of knowing *Gnaphalium affine*

The number of types of knowing *Gnaphalium affine* was examined by asking about the number of types of knowing the plant as they were presented with the photos of *Gnaphalium affine*, and even redundant responses were marked. If only the name was different, it was marked only as one type; if the respondents said there are two types and that they were precisely aware of the characteristics of each type, it was marked as two types. Other responses were classified as others.

3) Experience of eating food made with *Gnaphalium affine*

To examine the experience of eating food with *Gnaphalium affine*, respondents talked freely about the food they have eaten, and the same respondents were grouped together to

investigate the rate. The number of redundant respondents was also included since some of them have eaten at least two different dishes. The rate (%) of respondents with regard to the experience of eating of each dish was calculated by ‘the number of each response / the number of subjects X 100.’

4) Experience of cooking with *Gnaphalium affine*

To examine the experience of cooking with *Gnaphalium affine*, respondents talked freely about the food they have eaten, and the same respondents were grouped together to investigate the rate. The number of redundant respondents was also included since some of them have cooked at least two different dishes. The rate (%) of respondents with regard to the experience of cooking of each dish was calculated by ‘the number of each response / the number of subjects X 100.’

5) Taste and stickiness of rice cake made with *Gnaphalium affine*

To examine the taste and stickiness of rice cake made with *Gnaphalium affine*, 160 respondents experienced eating food such as the taste and stickiness of rice cake were categorized five-point scale. They gave 5 points for ‘very delicious’, 4 points for ‘delicious’, 3 points for ‘average’, 2 points for ‘not delicious’, and 1 point for ‘not delicious at all’. In term of stickiness, they gave 5 points for ‘very sticky’, 4 points for ‘sticky’, 3 points for ‘average’, 2 points for ‘not sticky’, and 1 point for ‘not sticky at all’. All data were collected to get average point.

6) The last eating time of *Gnaphalium affine* rice cake

To examine the last eating time of *Gnaphalium affine* rice cake, 160 respondents experienced eating food that they were asked about the last eating time when they ate rice cake and the responses were categorized into before 1950, 1951-1970, 1971-1990, 1991-2010, and after 2011 to calculate each rate.

4. Data collection and analysis

The collected data were categorized and coded in an Excel file, and the rates were calculated using SAS (Statistical Analysis System (Version 9.3, Cary, NC, USA). Data were analysed Duncan's Multiple Range Test at $\leq 0.05\%$.

III. Results and discussions

1. Regional name and number of types perceived

The names of *Gnaphalium affine* among 259 women aged 60 or older than 60 in 18 cities and counties of Jeonnam were investigated. One person did not know about standard name of *Gnaphalium affine*. 178 (68.7%) of respondents knew the regional name (Table 1). Knowing regional name was Jebissuk (37.5%), followed by Jebissuk (37.5%), Gaessuk (21.2%), Seorissuk (19.7%), Gyessuk (4.3%), and Goissuk (1.9%) including redundant responses. *Gnaphalium affine* plant was called Jebissuk in 11 regions, Gaessuk in 8 regions, Seorissuk in 7 regions, Gyessuk in 4 regions, and Goissuk in 2 regions. In other words, at least 60% of respondents who know about *Gnaphalium affine* in Naju, Gangjin, Yeonggwang, Boseong, Jangheung, Haenam and Jangseong were called as Jebissuk, and at least 50% of respondents in Gurye, Gokseong, Damyang and Hwasun were called as Gaessuk. In Yeonggwang and Hampyeong, the respondents mostly knew two names; at least 50% they knew it as Gaessuk, while at least 87% they knew it as Seorissuk.

The names Seorissuk and Jebissuk were not used in Gurye, Gwangyang, Damyang, Gwangyang, Suncheon and Hwasun. Instead, the plant was referred to as Gaessuk and Gyessuk except Hwasun county, these regions were shown the similarity of being located in the eastern part of Jeonnam geographically. The survey area in Hwasun was Dongbok-myeon, which is

close to Suncheon. In Yeosu, 26.7% of the respondents knew the plant as Seorissuk, and they were women who moved to Yeosu from different provinces due to marriage.

In Damyang, the plant was referred to as Gaessuk, which was because even though it is true mugwort (Chamssuk) used as mugwort, it has relatively low availability. Considering *Gnaphalium affine* was more scarce and high-quality than wormwood (Heo, 2015), indicating that it originated from Goissuk (Kim et al., 2014), which is another name for the plant. In Gwangyang it was referred to as Goissuk that gathered bud of this plant resembling cat eye. 'Goi' indicates a cat in this region, and 'Goissuk' means that this plant is used in rice cake like mugwort.

Meanwhile, many people referred to *Gnaphalium affine* as Seorissuk in Yeonggwang, Hampyeong and Jangseong. But these people referred to the tall grayish plants like sprinkles of snow as Seorissuk, while they classified short ones as Jebissuk, which required additional research in terms of plant taxonomy. Furthermore, there was also a need for research on the origin of the name Jebissuk, since the reason was unclear among the respondents.

The result of investigating the types of *Gnaphalium affine* perceived by 178 respondents who knew 82.6% as one type and 17.4% as two types (Table 3). By region, most of them responded that there was one type, but at least 43% of respondents in Yeonggwang, Hampyeong and Muan were two types, Seorissuk and Jebissuk, as shown in Table 2. Participants in those regions were asked about the difference between the two types, to which they responded specifically that Seorissuk was tall while Jebissuk was short and sharp. This will be required plant taxonomy with plant phenotype.

2. Experience of eating and making food with *Gnaphalium affine* according to use

The result of investigating the experience of eating food with *Gnaphalium affine* was showed that 169 subjects (62.3%) was experienced it (Table 4). Among them, including redundant responses, 160 subjects (94.7%) said they ate rice cake, 17 subjects (10.1%) said they ate Gaetteok (baked rice cake), 6 subjects (3.6%) said they ate soup, 1.8% said they ate it mixed with beans and 1.8% said they ate it for medicine.

Table 2. The name of *Gnaphalium affine* known 60-year-old woman or older living in Jeonnam province.

Area	Number of respondent by a kind of regional dialect (%)					Don't know
	Gaessuk (개썩)	Gyessuk (계썩)	Goissuk (괴썩)	Seorissuk (서리썩)	Jebissuk (제비썩)	
Boseong	0.0 (0 ²)	0.0 (0)	0.0 (0)	0.0 (0)	70.0 (7)	30.0 (3)
Damyang	86.7 (13)	13.3 (2)	0.0 (0)	0.0 (0)	0.0 (0)	13.3 (2)
Ganggjin	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	71.4 (10)	28.6 (4)
Goheung	9.1 (1)	0.0 (0)	0.0 (0)	0.0 (0)	27.3 (3)	72.7 (8)
Gokseong	61.5 (8)	7.7 (1)	0.0 (0)	0.0 (0)	0.0 (0)	38.5 (5)
Gurye	57.1 (8)	21.4 (3)	0.0 (0)	0.0 (0)	0.0 (0)	42.9 (6)
Gwangyang	33.3 (5)	33.3 (5)	26.7 (4)	0.0 (0)	0.0 (0)	40.0 (6)
Haenam	0.0 (0)	0.0 (0)	0.0 (0)	6.7 (1)	86.7 (13)	13.3 (2)
Hampyeong	0.0 (0)	0.0 (0)	0.0 (0)	87.5 (14)	37.5 (6)	12.5 (2)
Hwasun	81.3 (13)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	18.8 (3)
Jangheung	5.9 (1)	0.0 (0)	5.9 (1)	0.0 (0)	64.7 (11)	35.3 (6)
Jangseong	0.0 (0)	0.0 (0)	0.0 (0)	40.0 (6)	60.0 (9)	0.0 (0)
Muan	0.0 (0)	0.0 (0)	0.0 (0)	61.5 (8)	30.8 (4)	38.5 (5)
Naju	0.0 (0)	0.0 (0)	0.0 (0)	6.7 (1)	93.3 (14)	6.7 (1)
Suncheon	37.5 (6)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	62.5 (10)
Wando	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	45.5 (5)	54.5 (6)
Yeonggwang	0.0 (0)	0.0 (0)	0.0 (0)	94.4 (17)	83.3 (15)	5.6 (1)
Yeosu	0.0 (0)	0.0 (0)	0.0 (0)	26.7 (4)	0.0 (0)	73.3 (11)
Total	21.2 (55)	4.3 (11)	1.9 (5)	19.7 (51)	37.5 (97)	31.3 (81)

²Number of respondent.**Table 3.** Survey of 178 respondents about knowing *Gnaphalium affine* due to 60-year-old woman or older woman living in Jeonnam province.

Area	Number of the kinds of the familiar cottonweeds (%)	
	One	Two
Boseong	100.0 (7 ²)	0.0 (0)
Damyang	100.0 (13)	0.0 (0)
Ganggjin	100.0 (10)	0.0 (0)
Goheung	100.0 (3)	0.0 (0)
Gokseong	87.5 (7)	12.5 (1)
Gurye	100.0 (8)	0.0 (0)
Gwangyang	100.0 (9)	0.0 (0)
Haenam	92.3 (12)	7.7 (1)
Hampyeong	57.1 (8)	42.9 (6)
Hwasun	100.0 (13)	0.0 (0)
Jangheung	81.8 (9)	18.2 (2)
Jangseong	100.0 (15)	0.0 (0)
Muan	50.0 (4)	50.0 (4)
Naju	85.7 (12)	14.3 (2)
Suncheon	100.0 (6)	0.0 (0)
Wando	100.0 (5)	0.0 (0)
Yeonggwang	11.8 (2)	88.2 (15)
Yeosu	100.0 (4)	0.0 (0)
Total	82.6 (147)	17.4 (31)

²Number of respondent.

At least 50% of the respondents had experience eating *Gnaphalium affine* rice cake except Goheung, Suncheon, Gwangyang, Wando and Yeosu. In particular, the rate was at least 81% in Naju, Damyang, Yeonggwang, Hampyeong and Haenam, which indicated that *Gnaphalium affine* was mainly used in rice cake. Damyang, Gurye, Boseong, Suncheon, Gokseong, Gwangyang and Hwasun had respondents who tried Gaetteok made with *Gnaphalium affine*. Cho et al. (2005) conducted a survey on the distribution of wild vegetables in five-day markets of 11 regions in Jeonnam from early March to mid-May in 2005, and the results showed that *Gnaphalium affine* was distributed in the five-day markets of Naju, Gangjin, Yeongam, Hampyeong and Haenam. This was closely related to the regions where many respondents said they had experience eating food make with *Gnaphalium affine* in this study.

As a result of investigating the experience of making food with *Gnaphalium affine* among 259 women aged 60 or older people than 60 in 18 cities and counties in Jeonnam, only 110 subjects (42.5%) responded that they ate it (Table 5). By region, all respondents in Goheung, and at least 82.4% in

Table 4. Edible experience and use of *Gnaphalium affine* 60-year-old woman or older living in Jeonnam province.

Area	Distribution ratio of respondent (%) ^z						None
	Rice cake	Bran cake	Steamed rice cake mixed with mugwort.	Broth	Medicinal use	The others	
Boseong	60.0 (6 ^y)	10.0 (1)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	40.0 (4)
Damyang	86.7 (13)	60.0 (9)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	13.3 (2)
Ganggjin	71.4 (10)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	28.6 (4)
Goheung	27.3 (3)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	72.7 (8)
Gokseong	61.5 (8)	15.4 (2)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	38.5 (5)
Guyre	57.1 (8)	7.1 (1)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	42.9 (6)
Gwangyang	6.7 (1)	6.7 (1)	13.3 (2)	40.0 (6)	13.3 (2)	0.0 (0)	46.7 (7)
Haenam	86.7 (13)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	13.3 (2)
Hampyeong	81.3 (13)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	18.8 (3)
Hwasun	75.0 (12)	12.5 (2)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	25.0 (4)
Jangheung	58.8 (10)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	5.9 (1)	35.3 (6)
Jangseong	100.0 (15)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
Muan	61.5 (8)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	38.5 (5)
Naju	93.3 (14)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	6.7 (1)
Suncheon	37.5 (6)	6.3 (1)	6.3 (1)	0.0 (0)	0.0 (0)	0.0 (0)	62.5 (10)
Wando	45.5 (5)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	54.5 (6)
Yeonggwang	83.3 (15)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	16.7 (3)
Yeosu	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	6.7 (1)	0.0 (0)	93.3 (14)
Total	61.8 (160)	6.6 (17)	1.2 (3)	2.3 (6)	1.2 (3)	0.4 (1)	34.8 (90)

^zRatio of number of respondents with edible experience = number of each respondent / number of total survey × 100^y includes the number of duplicate respondents.

^yNumber of respondent.

Table 5. Food cooking of *Gnaphalium affine* among 259 women with 60-year-old woman or older who live in Jeonnam province.

Area	Distribution ratio of respondent by manufacturing experience (%) ^z				None
	Rice cake	Bran cake	Steamed rice cake mixed with mugwort.	Medicinal use	
Boseong	30.0 (3 ^y)	0.0 (0)	0.0 (0)	0.0 (0)	70.0 (7)
Damyang	66.7 (10)	46.7 (7)	0.0 (0)	0.0 (0)	33.3 (5)
Ganggjin	42.9 (6)	0.0 (0)	0.0 (0)	0.0 (0)	57.1 (8)
Goheung	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	100.0 (11)
Gokseong	53.8 (7)	23.1 (3)	0.0 (0)	0.0 (0)	46.2 (6)
Guyre	21.4 (3)	7.1 (1)	7.1 (1)	0.0 (0)	78.6 (11)
Gwangyang	0.0 (0)	0.0 (0)	0.0 (0)	13.3 (2)	86.7 (13)
Haenam	40.0 (6)	0.0 (0)	0.0 (0)	0.0 (0)	60.0 (9)
Hampyeong	50.0 (8)	0.0 (0)	0.0 (0)	0.0 (0)	50.0 (8)
Hwasun	50.0 (8)	0.0 (0)	0.0 (0)	0.0 (0)	37.5 (6)
Jangheung	17.6 (3)	0.0 (0)	0.0 (0)	0.0 (0)	82.4 (14)
Jangseong	73.3 (11)	6.7 (1)	0.0 (0)	0.0 (0)	20.0 (3)
Muan	46.2 (6)	0.0 (0)	0.0 (0)	0.0 (0)	53.8 (7)
Naju	73.3 (11)	0.0 (0)	0.0 (0)	0.0 (0)	26.7 (4)
Suncheon	25.0 (4)	12.5 (2)	6.3 (1)	0.0 (0)	75.0 (12)
Wando	36.4 (4)	0.0 (0)	0.0 (0)	0.0 (0)	63.6 (7)
Yeonggwang	77.8 (14)	0.0 (0)	0.0 (0)	0.0 (0)	22.2 (4)
Yeosu	0.0 (0)	0.0 (0)	0.0 (0)	6.7 (1)	93.3 (14)
Total	40.2 (104)	5.4 (14)	0.8 (2)	1.2 (3)	57.5 (149)

^zRatio of food cooking of number of respondents = number of each respondent / number of total survey × 100 includes the number of duplicate respondents.

^yNumber of respondent.

Gwangyang, Yeosu and Jangheung said they did not eat it. On the other hand, at least 73.3% in Naju (73.3%), Yeonggwang (77.8%), and Jangseong (80.0%) said they did eat it. By item, rice cake accounted for 40.2% (104 respondents), Gaetteok 5.4% (14 respondents), medicine 1.2% (3 respondents), and rice cake mixed with beans 0.8% (2 respondents) among 259 respondents.

Respondents with experience making Gaetteok using *Gnaphalium affine* were living in Damyang (46.7%), Gokseong (23.1%), Suncheon (12.5%), Gurye (7.1%), and Jangseong (6.7%), while those with experience making rice cake mixed with beans were limited only to those living in Gurye (7.1%) and Suncheon (6.3%). In addition, some respondents said they used the plant as medicine in Gwangyang (13.3%) and Yeosu (6.7%). Using *Gnaphalium affine* had clear distinctions among regions, which suggests that there may be great value in developing local specialties using the plant.

3. Evaluation of rice cake made with *Gnaphalium affine* and the last time eating it

As a result of investigating the taste and stickiness of *Gnaphalium affine* rice cake on a five-point scale among 160 respondents was shown that the mean of taste and stickiness was 4.75 and 4.89, respectively (Table 6). There were slight differences among regions with regard to evaluation of taste, with Wando showing the lowest score at 4.4 points, followed by Gangjin and Gurye at 4.5 points and Jangheung and Gwangyang at 4.6 points, which were relatively low compared to other regions. Stickiness was low in Gurye at 4.6 points and Suncheon at 4.7 points.

The result of investigating the last time they have eaten rice cake among 160 respondents with experience eating *Gnaphalium affine* rice cake was shown that many of them ate it in 1951-1970 (33.1%), followed by 1971-1990 (29.4%), 1991-2010 (17.5%), after 2011 (13.8%), and before 1950 (10.0%) (Table 6). Only 7 regions still ate *Gnaphalium affine* rice cake even after 2011, and only 4 of them had at least 20% of respondents still eating such rice cake, which are Naju, Damyang, Yeonggwang and Jangseong. This suggests that the culture of eating *Gnaphalium affine* rice cake is slowly disappearing.

Gurye, Goheung, Wando and Yeosu had many respondents who ate *Gnaphalium affine* rice cake before 1971, which were

the eastern regions of Jeonnam. Yeonggwang, Damyang, Naju and Jangseong had many respondents who still eat such rice cake after 2011, showing a difference among regions. Meanwhile, there was one respondent (16.7%) in Suncheon who was still eating such rice cake after 2011, even though it was the eastern region of Jeonnam that the survey was done in the mountainous area, which showed differences depending on whether it was a plain or a mountain even in the same region.

Park and Chun (2015) examined ethnic plants in 14 cities and counties of Jeonnam from April to December 2008 and April to November 2013, and discovered that *Gnaphalium affine* in Yeongam-gun, and ramie in Yeonggwang-gun were commonly used as a rice cake plant. However, considering that

Table 6. Evaluation of the taste and stickiness of *Gnaphalium affine* with edible rice cakes among 160 women with 60-year-old woman or older who live in Jeonnam province.

Area	Estimated values ^z	
	Taste	Stickiness
Boseong	5.0 ^y a ^x	5.0 ^w a
Damyang	4.8 ab	4.9 a
Ganggjin	4.5 b	4.8 ab
Goheung	5.0 a	5.0 a
Gokseong	4.8 ab	4.9 a
Gurye	4.5 b	4.6 b
Gwangyang	4.6 b	4.9 a
Haenam	4.8 ab	4.8 ab
Hampyeong	4.8 ab	4.8 ab
Hwasun	4.7 ab	4.9 a
Jangheung	4.6 b	5.0 a
Jangseong	4.7 ab	4.9 a
Muan	4.8 ab	4.9 a
Naju	5.0 a	5.0 a
Suncheon	4.7 ab	4.7 ab
Wando	4.4 b	5.0 a
Yeonggwang	4.8 ab	4.9 a
Yeosu	5.0 a	5.0 a
Total	4.75	4.89

^zMean value of 160 persons who experienced edible *Gnaphalium affine* rice cakes.

^y5; Very delicious, 4; delicious, 3; usually, 2; no taste, 1; not very tasty.

^xMean separation within columns by Duncan's multiple range test at 5% level.

^w5; Very sticky 4; sticky 3; usually, 2; no sticky; 1; not very sticky.

Table 7. Final eating period of *Gnaphalium affine* with edible rice cakes among 160 women with 60-year-old woman or older who live in Jeonnam Province.

Area	Distribution ratio of respondent (%)				
	Before 1950	1951-1970	1971-1990	1991-2010	After 2011
Boseong	50.0 (3 ²)	0.0 (0)	50.0 (3)	0.0 (0)	0.0 (0)
Damyang	0.0 (0)	0.0 (0)	30.8 (4)	46.2 (6)	23.1 (3)
Ganggjin	0.0 (0)	60.0 (6)	40.0 (4)	0.0 (0)	0.0 (0)
Goheung	0.0 (0)	100.0 (3)	0.0 (0)	0.0 (0)	0.0 (0)
Gokseong	0.0 (0)	50.0 (4)	50.0 (4)	0.0 (0)	0.0 (0)
Guyre	50.0 (4)	50.0 (4)	0.0 (0)	0.0 (0)	0.0 (0)
Gwangyang	62.5 (5)	12.5 (1)	0.0 (0)	25.0 (2)	0.0 (0)
Haenam	15.4 (2)	53.8 (7)	23.1 (3)	7.7 (1)	0.0 (0)
Hampyeong	0.0 (0)	38.5 (5)	30.8 (4)	23.1 (3)	7.7 (1)
Hwasun	0.0 (0)	16.7 (2)	50.0 (6)	16.7 (2)	16.7 (2)
Jangheung	9.1 (1)	45.5 (5)	36.4 (4)	9.1 (1)	0.0 (0)
Jangseong	0.0 (0)	6.7 (1)	33.3 (5)	40.0 (6)	20.0 (3)
Muan	0.0 (0)	50.0 (4)	37.5 (3)	12.5 (1)	0.0 (0)
Naju	0.0 (0)	45.5 (5)	27.3 (3)	0.0 (0)	27.3 (3)
Suncheon	0.0 (0)	16.7 (1)	66.7 (4)	0.0 (0)	16.7 (1)
Wando	20.0 (1)	80.0 (4)	0.0 (0)	0.0 (0)	0.0 (0)
Yeonggwang	0.0 (0)	0.0 (0)	0.0 (0)	40.0 (6)	60.0 (9)
Yeosu	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
Total	10.0 (16)	33.1 (53)	29.4 (47)	17.5 (28)	13.8 (22)

²Number of respondent.

Yeongam-gun was not included in this study, it could be considered that the culture of eating *Gnaphalium affine* rice cake still remains in the central part of Jeonnam. Since there are no places cultivating or making *Gnaphalium affine* in these regions as well, it is necessary to come up with measures to pass down, preserve and develop the fading culture of making and eating *Gnaphalium affine* rice cake.

In summary, there was a clear difference in the regional name, use, experience of eating and making, and the last time eating *Gnaphalium affine* among 18 cities and counties of Jeonnam. The culture of using *Gnaphalium affine* does not remain until today, but has faded before the development of transportation and communication. Partially some regions is passed down the culture of using *Gnaphalium affine*. Therefore, further research will be required to conduct the regional culture of using *Gnaphalium affine* and utilization of the plant.

IV. Conclusion

This study was conducted a survey on 259 women aged 60 or above living in 18 cities and counties in Jeonnam to collect basic information related with culture of using the traditional rice cake plant resource *Gnaphalium affine*. No one was aware of the standard name of *Gnaphalium affine*. 68.7% (178 respondents) of them knew the regional names, the highest rate being Jebissuk (37.5%), followed by Gaessuk (21.2%), Seorissuk (19.7%), Gyessuk (4.3%), and Goissuk (1.9%) including redundant responses. 82.6% of the respondents who knew about *Gnaphalium affine* (178 respondents) thought there was only one type, while 17.4% thought there were two types. 62.3% of the respondents said they had experience eating food made with *Gnaphalium affine*, and 62.3% had experience making food with *Gnaphalium affine*. 61.8 had experience eating and 40.2% had experience making *Gnaphalium affine* rice cake. The respondents rated the taste and stickiness of *Gnaphalium*

affine rice cake on a five-point scale, and the highest rate of response was ‘delicious or higher (4.75)’ and ‘sticky or higher (4.89)’. The last time they ate *Gnaphalium affine* rice cake showed the highest rate at 1951-1970 (33.1%), followed by 1971-1990 (29.4%), 1991-2010 (17.5%), after 2011 (13.8%), and before 1950 (10.0%). Considering these results, it is necessary to promote the standard name of *Gnaphalium affine* and vitalize the culture of using the plant.

V. References

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