KISCS-AFK043-WSL

Clinical Trial Report

Clinical trial of ‘V-Up Patch’ on improvement of lifting of jowl

Referral agency: Wooshin Labottach CO., LTD
15. 02. 2017

한국피부과학연구원
Korea Institute of Dermatological Sciences

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Appendix

Report

This clinical trial ‘V-Up Patch’ on improvement of lifting of jowl was requested by Wooshin Labottach CO., LTD to Korea Institute of Dermatological Science. We faithfully conducted research in accordance with regulations on designation, pharmaceutical clinical trial management criteria, cosmetic human application and efficacy test guidelines, test method guidelines for cosmetic labeling and advertisement demonstration, guidelines for evaluating the effectiveness of functional cosmetics, the Ministry of Health and Welfare law on ethics and safety and the SOP of Korean Institute of Dermatology.

15. 02. 2017

Testing agency: Korea Institute of Dermatological Science

Test manager: ScD Ahn In-sook

Test personnel: ScD Gwon Seung-bin

Information of Testing and Referral agency

Test title	Clinical trial of 'V-Up Patch' on improvement of lifting of jowl
CODE NO	KISCS-AFK043-WSL

Referral agency	Name	WOOSHIN LABOTTACH CO., LTD.
	Address	1907ho, 288, Digital-ro, Guro-gu, Seoul, Republic of Korea
	Telephone	02-786-9849
	E-mail	wooshinlabo-mk@wooshinmed.com
Testing agency	Name	Korea Institute of Dermatological Science
	Address	306ho, 244, Beotkkot-ro, Geumcheon-gu, Seoul, Republic of Korea
	Telephone	070-7707-2277
	E-mail	kimjh@skinresearch.or.kr

Test manager	Affilation	Korea Institute of Dermatological Science	Manager	ScD Ahn In-sook
	Address	306ho, 244, Beotkkot-ro, Geumcheon-gu, Seoul, Republic of Korea		
Test personnel	Name	ScD Gwon Seung-bin		
	Test Period	21. 12. 2016 ~ 15. 02. 2017	Report Date	15. 02. 2017

Reliability Guarantee

□Test Title: Clinical trial of ‘V-Up Patch’ on improvement of lifting of jowl

□Test number: KISCS-AFK043-WSL

This test is conducted in accordance with the ethics and regulation of Helsinki Declaration, regulations on designation, pharmaceutical clinical trial management criteria, cosmetic human application and efficacy test guidelines, test method guidelines for cosmetic labeling and advertisement demonstration, guidelines for evaluating the effectiveness of functional cosmetics, the Ministry of Health and Welfare law on ethics and safety and the SOP of Korean Institute of Dermatology.

Test title	Clinical trial of ‘V-Up Patch’ on improvement of lifting of jowl				
Inspection	Phase	Test	Result	Report Date	Note
21. 12. 2016	Test plan	Planning the trial	Approval	21. 12. 2016	
28. 12. 2016 ~ 25. 01. 2017	Test	Checking the Test period	Approval	25. 01. 2017	
08. 02. 2017	Report Draft	Checking the raw data, Examining the report draft	Approval	08. 02. 2017	
15. 02. 2017	Final Report	Examining the final report	Approval	15. 02. 2017	

This research report is based on test results and proves that it accurately reflects test data.

15. 02. 2017

Summary of Clinical study

Test title	A human application test of 'V-Up Patch' on improvement of lifting of jowl	
Testing agency	Korea Institute of Dermatological Science	
Referral agency	WOOSHIN LABOTTACH CO., LTD.	
Test manager	ScD Ahn In-sook	
Test personnel	ScD Gwon Seung-bin	
Name of test material	V-Up Patch	
Test period	December 21, 2016(Date of test start) ~ February 15, 2017(Date of test end) (Date of test start: A day when the test manager signed the test plan/Date of test end: A day when the test manager signed the final report)	
Subject	20 female subjects aged 30 or more who meet the selection criteria of subjects and do not correspond to the exclusion criteria	
Test method	Sample use method	The V-Up Patch was attached covering chin for 4 weeks. The patch was applied on the test area after clean and dry thoroughly every evening and detached after 8 hours for first 1 week. And then, the patch was applied every other day evening and detached after 8 hours for remaining 3 weeks.
	Assessment method	This test was performed according to SOP of Korea Institute of Dermatological Science and all process was inspected by the person in charge of reliability assurance. 1. Device measurement 1) Assessment about improvement of lifting of jowl by PRIMOS Face & Body SCAN 3D **2.** Assessment of skin disorder response **3.** Survey
Test results	1. Assessment about improvement of lifting of jowl by PRIMOS Face & Body SCAN 3D When compared with before using the test product, the bottom angle of facial region was reduced 3.10% and 3.61% 2 weeks after use and 4 weeks after use, respectively ($p<.05$). 2. During the test period, no skin disorder response was observed from subjects.	
Conclusion	V-Up Patch requested by WOOSHIN LABOTTACH is determined as appropriate product for improvement of lifting of jowl.	

Ⅰ. Background

The development of science increases the life expectancy, the proportion of the elderly population, and the increasing social interest in appearance due to active modern social exchanges. In order to meet these social needs, researches on controlling aging of the body have been conducted in various fields such as medical technology, welfare, and beauty, and in particular, the market of wrinkle functional cosmetics for aging skin in the cosmetics industry has taken a large part.

The skin is located at the outermost part of the body and serves to protect the body from the outside and thus is exposed to various external factors. External factors affecting the skin include a variety of factors, such as climatic factors such as seasonal changes and household items such as cosmetics and clothing, as well as environmental factors encountered in the surrounding living environment. Skin irritated by these factors can be easily damaged, and the degree of damage determines skin aging and pigmentation progression.

Skin aging is divided into endogenous aging and exogenous aging. While endogenous aging progresses through genetic factors and the passage of time and is uncontrollable, exogenous aging can be slowed down by efforts, such as smoking, heavy drinking, nutrition, and sunlight. In particular, 80% of facial aging is caused by exposure to ultraviolet rays and skin wrinkles increase and elasticity decreases due to various environmental factors, leading to aging skin, which is a cosmetic problem.

As aging progresses, the skin becomes flat at the border between the epidermis and the dermis, reducing the area of the border, making it more vulnerable to external damage and reducing skin nourishment. As the cell cycle decreases, the lumped keratinocytes on the surface of the skin not only give a rough and dull skin feel, but as the thickness of the dermis decreases, collagen is denatured and the water fibers are destroyed, causing wrinkles, drying, and aging.

Various cosmetic products such as wrinkle improvement creams, massage tools, and packs have been developed and applied in real life to slow down the skin change phenomenon. Recently, the research trend of cosmetics has been focused on the development and commercialization of new raw materials in line with the social demands for young and fresh appearance. have. However, more scientific research is needed to improve and prevent skin aging, and the development of cosmetics based on systematic human experiments and scientific analysis of results that meet the unlimited market potential is required.

The purpose of this study is to evaluate the human body's efficacy on the sagging jaw lifting improvement of the test material ‘V-up Patch', which was commissioned by Wooshin Labottach CO., LTD.

Ⅱ. Purpose

The purpose of this study is to evaluate the efficacy of the 'V-up Patch' on the sagging jaw lifting of adult women over 30 years of age.

Ⅲ. Test Period

21. 12. 2016 ~ 15. 02. 2017

Ⅳ. Testing agency

Name: Korea Institute of Dermatological Science
Address: 306ho, 244, Beotkkot-ro, Geumcheon-gu, Seoul, Republic of Korea
Telephone: 070-7707-2277
FAX: 0502-770-2278
E-Mail: kimjh@skinresearch.or.kr
Website: www.skinresearch.or.kr
Test personnel: ScD Gwon Seung-bin

Ⅴ. Referral agency

Name: WOOSHIN LABOTTACH CO., LTD.
Address: 1907ho, 288, Digital-ro, Guro-gu, Seoul, Republic of Korea
Telephone: 02-786-9849
FAX: 02-786-9850
E-Mail: wooshinlabo-mk@wooshinmed.com

VI. Test Method

1. Selection of the subject

Voluntary recruited adult women over the age of 30 who were satisfied with the criteria in 1) and did not meet the requirements in 2) were selected as subjects. The investigator or the test personnel delegated to the investigator fully informed the subject of all the information of the test, and the subject voluntarily completed the consent form and participated in the test.

1) Subject Selection Criteria

(1) A person who has been fully informed of the matters to be informed of the subject by the investigator or a person authorized by the investigator, and voluntarily completed and signed the consent form.
(2) Healthy person without acute and chronic physical disease including skin disease as adult woman more than 30 years old
(3) A person who can be followed up during the trial

2) Exclusion Criteria for Subject Selection

Upon interview with the applicant, the following subjects were excluded from the subject.

(1) Pregnant or lactating women and women who may be pregnant
(2) Those who use steroid-containing skin external preparations for at least 1 month to treat skin diseases
(3) Person who has not passed 6 months after participating in same test
(4) People with sensitive and irritable skin
(5) Those who have skin abnormalities such as spots, acne, erythema, and capillary dilatation on the test site
(6) The person who received the procedure at the test site within 6 months before the start of the study
(7) Person who is considered unsuitable for examination by judgment of other examination manager

3) Dropout Criteria for Subjects

In the following cases, it was suspended at the discretion of the investigator and recorded in the final report except for the test result calculation.

(1) When adverse events such as pruritus or erythema occur at the test site

(2) In case the subject fails to evaluate the results due to medical treatment, application of other products, excessive UV exposure, excessive drinking and smoking, etc

(3) The subject is difficult to follow up due to personal circumstances during the course of the test.

(4) When the test subject violates the method of use or schedule without any special reason

2. Test site

Based on the usage of the test substance, the face area including the underside of the test subject was selected above the test part of this test.

3. Use of test substance

The referral agency is responsible for verifying and securing the physical and chemical properties and safety of the test substance used in this test. The laboratory does not perform any separate analytical procedures to verify the physical and chemical properties of the test substance. Korea Institute of Dermatological Science keeps the test substance for 180 days from the date of publication of the report, and discards the test substance unless otherwise requested by the referral agency. Store the test substance at room temperature (temperature 5-25 °C), avoiding high temperatures and direct sunlight.

1) Test substance information

(1) Test substance name: Labotage V-up patch

(2) Test substance control number: M-KISCS-AFKP03-WSL

(3) Referral agency: Wooshin Labottach CO., LTD.

(4) Formulation: Hydrogel Patch

(5) All ingredients: see Appendix 3

2) Usage and dose of test substance

(1) The test subject was attached to the ear by evenly adhering the test substance 'V-Up patch' on the neck including the lower jaw for 4 weeks. The first week was applied for 8 hours after face wash every evening, and the second to 4 weeks were applied every other day for 8 hours after evening face wash.

(2) During the human application period, the use of functional cosmetics such as eye creams, whitening creams, and anti-aging creams, as well as the treatment of packs and massages, which may affect the test results, was prohibited.

4. Evaluation

1) Test place

This human application test was measured after having stabilized in a constant temperature and humidity room (temperature: 22 ± 2 ℃, humidity: 50 ± 5%) for 30 minutes after washing with the same face wash at Korea Institute of Dermatological Science.

2) Measurement

(1) Evaluation of loose jaw lifting by PRIMOS Face & Body SCAN 3D

In this test, PRIMOS Face & Body SCAN 3D (GFMesstechnik GmbH, Germany) was applied to evaluate the sagging lifting of the test material. The same investigator photographed the subject's facial area twice in succession, and measured after adjusting so that the facial part, which is the measuring part, matches the focus pattern of PRIMOS Face & Body SCAN 3D for reproducibility of the measurement. The captured images were 3D matched using Software version FaceXenios 4.4.2, a PRIMOS Face & Body SCAN 3D software, and the bottom angles of the facial area on the horizontal plane between the matched cheeks and chin were analyzed. The sagging jaw lifting analysis used the 2D cross sectional line to calculate the angle of the lower face of the face between the measured images. The unit of measurement was ° (degree). As the degree decreases, the sagging jaw lifting is improved. Instrument measurements were taken before and immediately after single use of the test substance and after 4 weeks of use.

Figure 1. PRIMOS Face & Body SCAN 3D.

(2) Adverse reaction evaluation

The investigator is responsible for erythema, edema, scaling, itching, stinging, burning, stiffness, and stinging that are abnormal skin at the test site. The results were prepared by observing whether or not skin abnormalities appeared and marking the grade. In addition, a questionnaire survey of skin adverse events was conducted on the subjects.

(3) Survey

The questionnaire was conducted on the characteristics of the general skin condition of the test subject, the skin condition before and after use of the test substance, and the feeling of use of the test substance. One question about the general skin condition characteristics and two questions about the skin condition before and after use of the test substance were examined using multiple choice. In addition, four questions were conducted using alternative / satisfactory types to examine the usability of the test substance.

5. Adverse Events

Adverse events are assessed at each individual visit by the individual Case Report Form, resulting in adverse events (erythema, swelling, swelling, itching, pain, burning, stiffness, tingling) or other abnormalities with each visit. Was evaluated. The records were classified as mild, medium, or severe. The test was checked for any suspension or dropouts and recorded in the case record. If you are no longer able to participate in the test even if you are not on the day of the visit, you will be asked to write a 'Agreement to Abandon the Test' with your signature.

6. Statistical Analysis

Statistical analysis of this test was analyzed using the SPSS 17.0 for Windows program. Mean, standard deviation, frequency, and percentage were used to analyze the questionnaire of the subjects, and paired t-test analysis was performed to analyze whether or not there was a significant change in the measurement results for various skin improvement.

Ⅶ. Test Results

1. Basic Information of Subject

The information of the subjects who participated in this experiment is as follows (Table 1).

Table 1. Basic Information on Subject

Regisetered Subjects	20
Final completed Subjects	20
Gender	Female
Average age	46.50
Standard Deviation	5.83

The ages of each subject participating in this study are shown in Figure 2 (see Appendix 1 for details).

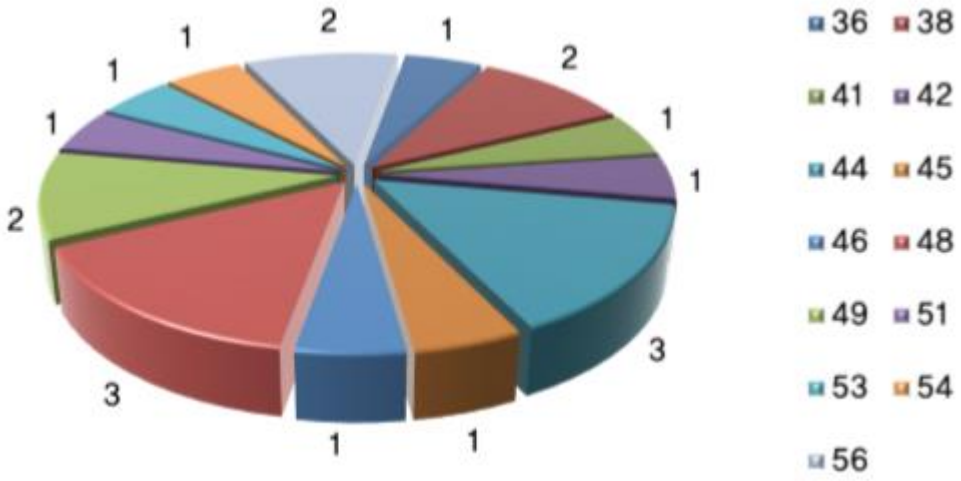

Figure 2. Subject age distribution.

2. Evaluation of loose jaw lifting improvement before and after use of test substance

he results of evaluation of sagging jaw lifting before and after 4 weeks of use of PRIMOS Face & Body SCAN 3D were as follows (Tables 2-4, Figures 3 and 4).

As a result of analyzing the extended jaw lifting improvement of the facial area using PRIMOS Face & Body Scan 3D, the lower angle of the facial area decreased 3.10% immediately after one use and 3.61% after four weeks of use compared to before the test substance. In addition, it was statistically significant after one week of use and four weeks after use ($p < .01$) compared to before the use of the test substance. Detailed data of the device evaluation are shown in Appendix 1 and 2.

Table 2. Change of angle at the bottom of the face (N=20)

	Before use	After one use	After 4 weeks use
Average	122.45	118.65	118.03
Standard Deviation	11.78	12.84	10.99

Table 3. Facial angle improvement rate at the bottom of the face (%)

	After one use	After 4 weeks use
Rate(%)	3.10	3.61

Table 3. Facial angle improvement rate at the bottom of the face (%)

	After one use	After 4 weeks use
p-value(%)	.003**	.007**

**p <.01, p- value is measured by paired *t*-test

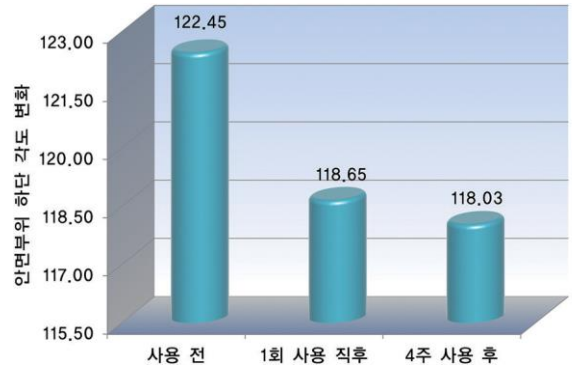

Figure 3. Change of angle at the bottom of the face

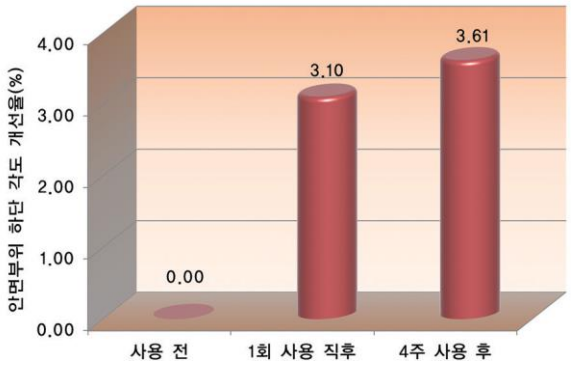

Figure 4. Facial angle improvement rate at the bottom of the face (%).

3. Evaluation of skin reactions

1) Evaluation of abnormal skin reactions by test personnel

No adverse reactions to allergic contact dermatitis or irritant contact dermatitis were observed after using the test substance in the subject.

2) Report of skin abnormality response by subject survey

Apart from evaluating adverse reactions by the investigator, the results of the questionnaire survey were as follows (Table 5). In a survey of subjects, no specific skin reactions were observed.

Table 5. Skin Adverse Events Reported by Subjects (N=20)

Skin adverse response	After 4 weeks	Skin adverse response	After 4 weeks
1. Erythema	0	5. Stinging	0
2. Edema	0	6. Burning	0
3. Scaling	0	7. Tightness	0
4. Itching	0	8. Prickling	0

4. Subjective Survey on Subject's Use Before and After Test Substance

1) Investigation of general skin condition characteristics of subject

The results of a questionnaire survey on general skin condition characteristics of the test subjects using multiple choices are as follows (Table 6)

Table 6. General Skin Condition Characteristics (N=20)

	Characteristics	Number	Percentage(%)
Type of Skin	Oily	0	0.0
	Normal skin	1	5.0
	Combination skin	11	55.0
	Dry	8	40.0
	Sensitive	0	0.0
	Total	20	100.0

2) Investigation of skin condition before using test substance of test subject

The results of a questionnaire survey on the skin condition of the test subjects before using the test substance using multiple choices are as follows (Table 7).

Table 7. Skin condition before using test substance (N=20)

Questions		Number	Percentage(%)
The skin on the chin is elastic without sagging	Absolutely no	6	30.0
	No	14	70.0
	Average	0	0.0
	Yes	0	0.0
	Absolutely yes	0	0.0
If your jaw skin sags The double chin does not fold	Absolutely no	6	30.0
	No	14	70.0
	Average	0	0.0
	Yes	0	0.0
	Absolutely yes	0	0.0
Total		20	100.0

3) Investigation of user's feeling after using test substance

Using the satisfactory / dissatisfied alternative form, the test results of the test subjects' feelings on the test substance are as follows (Table 8).

Table 8. Test substance feeling (N=20)

Questions	Answer	After 4weeks	
		Number	Percentage(%)
Adhesion	Satisfied	20	100.0
	Unsatisfied	0	0.0
Elasticity	Satisfied	18	90.0
	Unsatisfied	2	10.0
Swelling relief	Satisfied	19	95.0
	Unsatisfied	1	5.0
Overall satisfaction with the feeling	Satisfied	20	100.0
	Unsatisfied	0	0.0

4) Investigation of skin condition after using test substance of test subject

The results of a questionnaire survey on skin condition after using test substance of test subjects using multiple choices are as follows (Table 9).

Table 9. Skin Condition after using test substance (N=20)

Questions		Number	Percentage(%)
I have elasticity in a chin part, It seems that skin sagging is reduced	Absolutely no	0	0.0
	No	0	0.0
	Average	3	15.0
	Yes	14	70.0
	Absolutely yes	3	15.0
The jaw line seems to be smooth due to sagging skin and double chin	Absolutely no	0	0.0
	No	0	0.0
	Average	4	20.0
	Yes	12	60.0
	Absolutely yes	4	20.0
Total		20	100.0

Ⅷ. Conclusion

Korea Institute of Dermatological sciences conducted a human application test to improve jaw lifting of the ‘V-Up Patch’ on 20 adult female subjects, commissioned by Wooshin Labottach Co., Ltd. The ‘V-up Patch’, commissioned by Wooshin Labottach Co., Ltd., analyzed the increased jaw lifting improvement using PRIMOS Face & Body SCAN 3D. The improvement in jaw lifting was 3.10% immediately after one use and 3.61% after four weeks.

Thus, the ‘V-Up Patch’ is considered to be a product that helps to improve sagging jaw lifting.

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Appendix

[Appendix 1] Details of test results

[Appendix 2] Pictures of Clinical trial

[Appendix 3] Ingredients of ‘V-Up patch’

[Appendix 4] Profile of researchers

[Appendix 5] Equipment of Testing agency

[Appendix 1] Details of test results

1. Basic information of subjects

Number	Name	Age	Gender
1	JHR	53	Female
2	BJS	42	Female
3	PJY	51	Female
4	KSJ	44	Female
5	LYS	54	Female
6	LKM	48	Female
7	PKO	56	Female
8	KJY	46	Female
9	PSY	56	Female
10	LKH	41	Female
11	JHY	38	Female
12	JYH	48	Female
13	LKS	44	Female
14	PMJ	45	Female
15	HMH	38	Female
16	LMJ	49	Female
17	KSH	36	Female
18	LEY	44	Female
19	OKH	49	Female
20	LEJ	48	Female
Average		46.50	20
Standard Deviation		5.83	

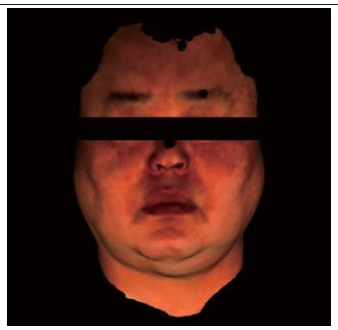
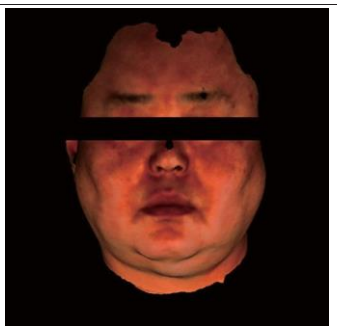
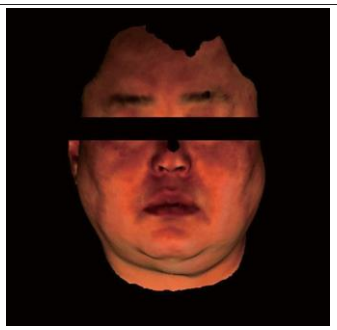
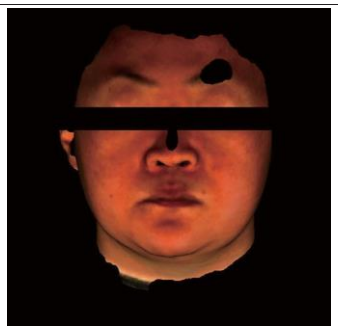
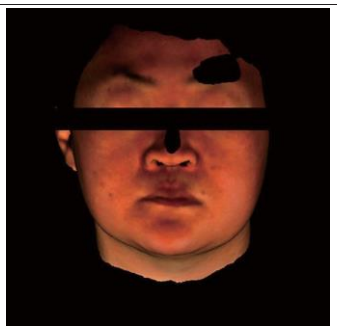
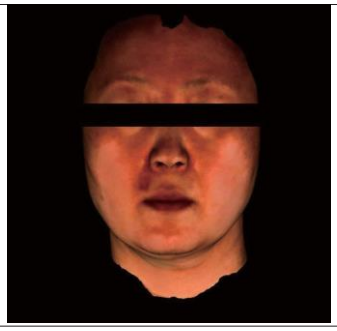
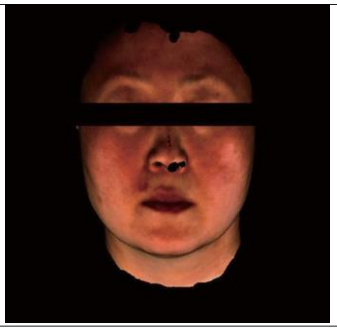
2. Slack Jaw Lifting Measures Variation

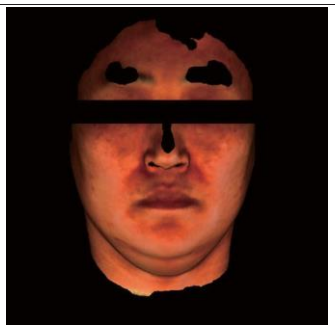
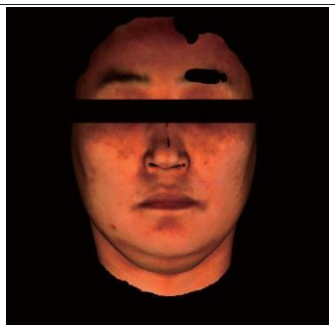
(1) the bottom face portion angle

	Before use	After one use	After 4 weeks use
1	118.10	118.02	116.49
2	148.68	144.77	129.50
3	120.96	100.75	110.74
4	117.46	112.08	114.29
5	116.79	105.86	100.51
6	119.97	116.28	113.76
7	136.23	132.90	134.99
8	108.38	101.32	113.30
9	119.30	118.64	106.63
10	115.00	114.11	115.56
11	115.01	110.76	118.64
12	107.45	108.97	107.27
13	123.91	116.20	114.47
14	140.68	142.26	138.61
15	132.88	127.31	131.18
16	136.48	135.99	136.76
17	129.33	126.50	119.69
18	126.63	123.40	122.85
19	108.74	109.86	109.17
20	107.04	107.03	106.16
Average	122.45	118.65	118.03
Standard Deviation	11.78	12.84	10.99

[Appendix 2] Pictures of Clinical trial

1. Picture from PRIMOS Face & Body SCAN 3D

Subject 1		
Before use	After one use	After 4 weeks use
		
Subject 2		
Before use	After one use	After 4 weeks use
		
Subject 3		
Before use	After one use	After 4 weeks use
		

Subject 4		
Before use	After one use	After 4 weeks use
		
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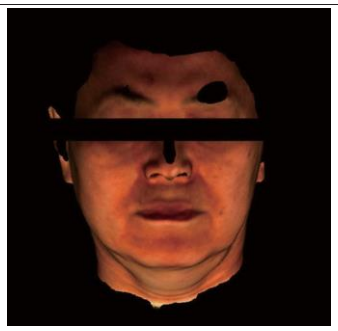	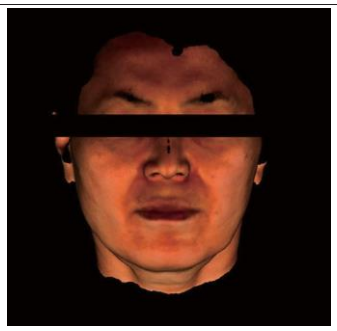	
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	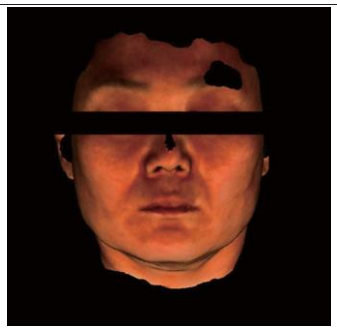	
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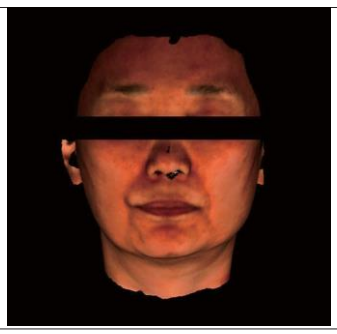	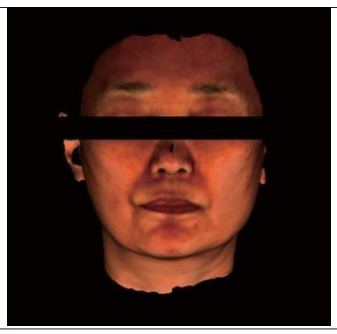	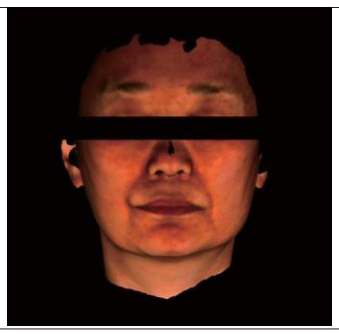

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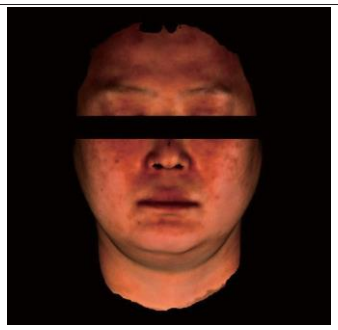	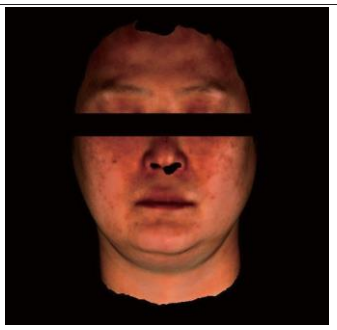	
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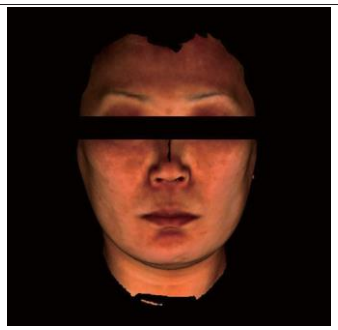
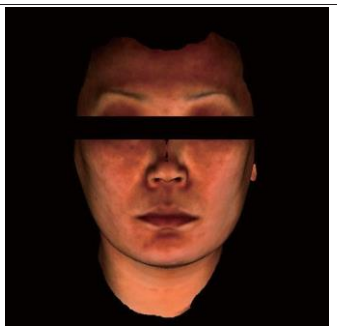
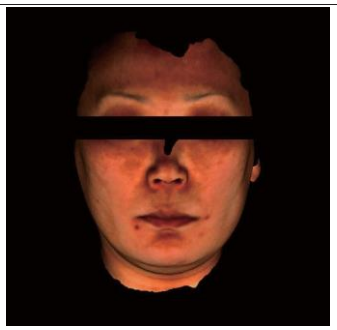
Before use	After one use	After 4 weeks use
		
Subject 10		
Before use	After one use	After 4 weeks use
		
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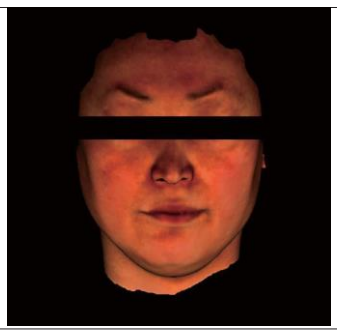	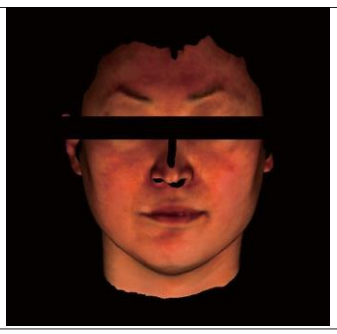	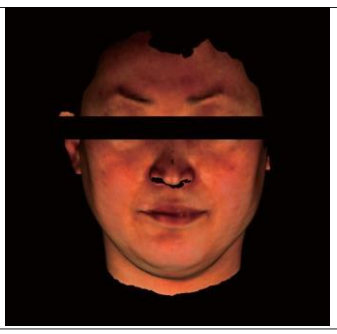

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		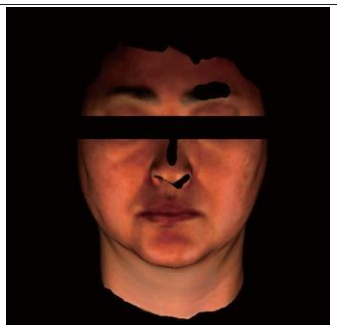
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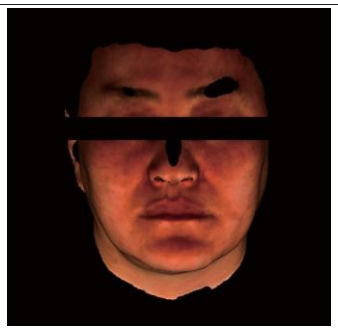		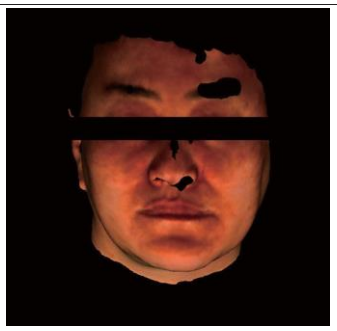
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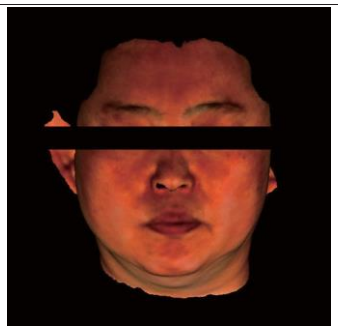	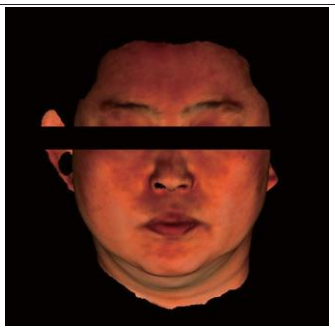	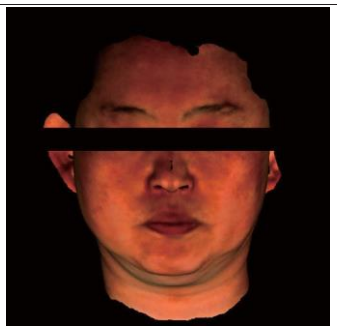
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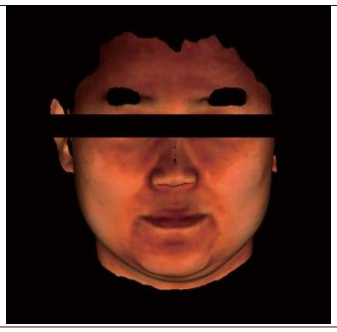		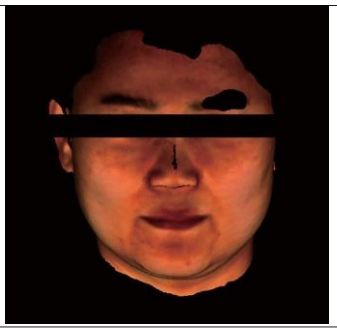

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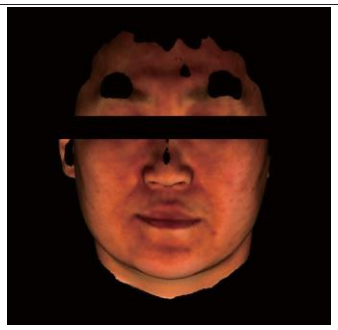	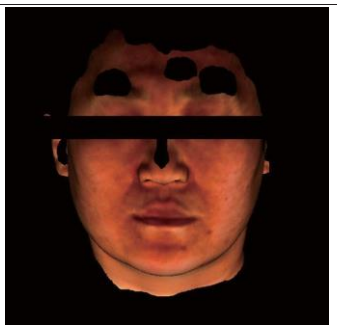	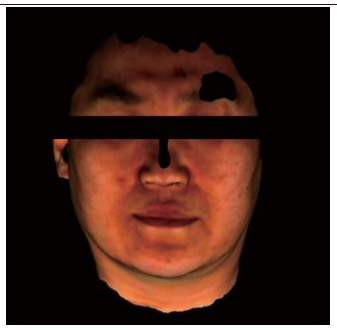
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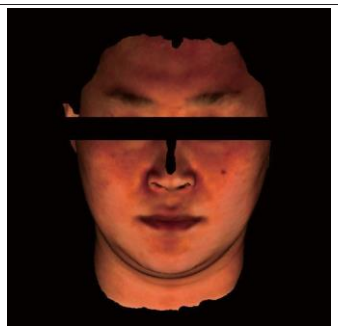	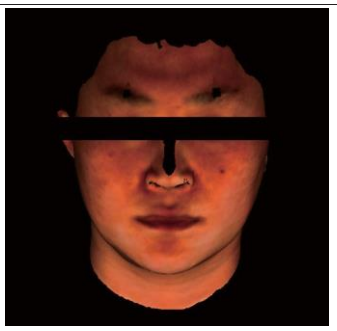	
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		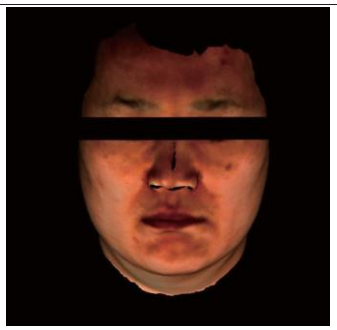
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		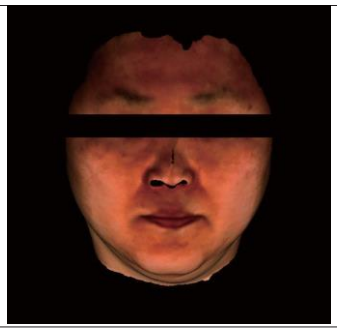

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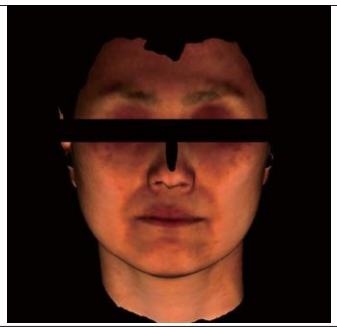	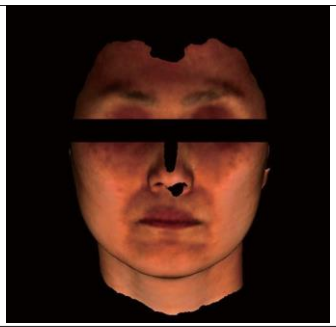	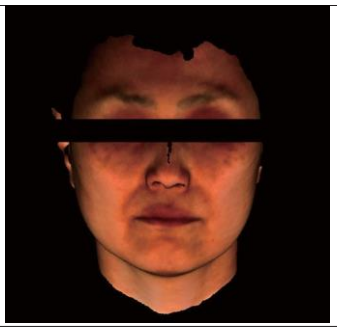

[Appendix 3] Ingredients of ‘V-Up patch’

V-Up Patch
Purified Water, Glycerin, Sodium Polyacrylate, Polyvinyl Alcohol, Cellulose Gum, Caffeine, Tocopheryl Acetate, Collagen, Polysorbate 80, Algin, PEG-400, Tataric Acid, Titanium Dioxide, Ceramide, Green Tea Extract, Olive Oil , Jojoba seed oil, hyaluronic acid, 1,2-hexanediol, aluminum glycinate, bioflavonoid, flavor

[Appendix 4] Profile of researchers

1. Biography, Research experience and performance of the Director / Tester

■ In-Sook Ahn (President, Adjunct Professor, Doctor of Science)

Career

2003. 03	- 2006. 02	Instructor, Chungcheong University, Far East Information University, Dongwon University
2003. 01	- 2010. 12	CEO of Skin Magic
2003. 01	- 2010. 12	Director of the Korean Society of Skin Beauty Development, Branch Manager of the Korean Society of Hairdressers
2005. 01	- 2010. 12	President of Ian Aesthetic Academy
2006. 03	- 2008. 12	Adjunct Professor, Department of Skin Beauty, Sangji Youngseo University
2008. 01	- 2010. 12	Director, Korea Women Entrepreneurship Association
2009. 01	- 2011. 12	Head Professor, Department of Beauty Design, Dongduk Women's University
2007. 01	- Present	Director, General Affairs and Planning Director, Korean Society of Skin Care
2012. 01	- Present	Researcher, Korea Institute of Dermatology
2013. 03	- Present	Adjunct Professor, Department of Perfume, Graduate School of Industry, Konkuk University
2015. 01	- Present	member of the KFDA Consumer Hazard Evaluation
2016. 01	- Present	Member of KFDA Cosmetics & Quasi-drug Research Committee
2016. 01	- Present	Member of Asian Beauty Cosmetics Journal (AJBC)
2016. 03	- Present	Special Specialist, China Personal Care Products Cosmetic Industry Technology Innovation Strategy Association

Awards

2007	Best Paper Award, Korean Society of Skin Care
2008	Konkuk University Graduate School of Industry Award
2009	Citation of Korean Society of Skin Beauty

Research Results

– International SCI-level academic papers

- Hahn HJ, Jung HJ, Schrammek-Drusios MC, et al. (2016) Instrumental evaluation of anti-aging effects of cosmetic formulations containing palmitoyl peptides, Silybum marianum seed oil, vitamin E and other functional ingredients on aged human skin. Exp. Ther. Med., 12: 1171-1176.
- Choi S, Youn J, Kim K, et al. (2016) Apigenin inhibits UVA-induced cytotoxicity in vitro and prevents signs of skin aging in vivo. Int. J. Mol. Med., 38: 627-634.
- Lee JJ, An S, Kim KB, et al. (2016) Extract of Ettlia sp. YC001 exerts photoprotective effects against UVB irradiation in normal human dermal fibroblasts. J. Microbiol. Biotechnol., 28: 775-783.
- Shin S, Kim K, Lee MJ, et al. (2016) Epigallocatechin Gallate-Mediated Alteration of the MicroRNA Expression Profile in 5α-Dihydrotestosterone-Treated Human Dermal Papilla Cells. Ann. Dermatol., 28: 327-334.
- Cha HJ, He C, Zhao H, et al. (2016) Intercellular and intracellular functions of ceramides and their metabolites in skin (Review). Int. J. Mol. Med., 38: 16-22.
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- Bae S, An IS, An S. Development of a high-throughput screening system for identification of novel reagents regulating DNA damage in human dermal fibroblasts. Acta. Pharm., 65: 331-341, 2015.
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- Lee BM, An S, Kim SY, et al. (2015) Topical application of a cleanser containing extracts of Diospyros kaki folium, Polygonum cuspidatum and Castanea crenata var. dulcis reduces skin oil content and pore size in human skin. Biomed. Rep., 3: 343-346.
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- Lee OK, Cha HJ, Lee MJ, et al. (2015) Implication of microRNA regulation in para-phenylenediamine-induced cell death and senescence in normal human hair dermal papilla cells. Mol. Med. Rep., 12: 921-936.
- Cha HJ, Lee OK, Kim SY, et al. (2015) MicroRNA expression profiling of p-phenylenediamine treatment in human keratinocyte cellline. Mol. Cell. Toxicol., 11: 19-28.
- Cha HJ, Bae S, Kim K, et al. (2015) Overdosage of methylparaben induces cellular senescence in vitro and in vivo. J. Invest. Dermatol., 135: 609-612.
- Bae S, Kim K, Cha HJ, et al. (2015) Low-dose γ-irradiation induces dual radio-adaptive responses depending on the post-irradiation time by altering microRNA expression profiles in normal human dermal fibroblasts. Int. J. Mol. Med., 35: 227-237.
- Bae S, Lim K, Cha H, et al. (2014) Arctiin blocks hydrogen peroxide-induced senescence and cell death though microRNA expression changes in human dermal papilla cells. Biol. Res., 47: 50.
- Cha HJ, Kim OY, Lee GT, et al. (2014) Identification of ultraviolet B radiation–induced microRNAs in normal human dermal papilla cells. Mol. Med. Rep., 10: 1663-1670.
- Kim KB, Kim K, Bae S, et al. (2014) MicroRNA-1290 promotes asiatic acid-induced apoptosis by decreasing BCL2 protein level in A549 non–small cell lung carcinoma cells. Oncol. Rep., 32: 1029-1036.
- Bae S, Kim K, Cha HJ, et al. (2014) Altered microRNA expression profiles are involved in resistance to low-dose ionizing radiation in the absence of BMI1 in human dermal fibroblasts. Int. J. Oncol., 45: 1618-1628.
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- Lee KS, Cha HJ, Lee GT, et al. (2014) Troxerutin induces protective effects against ultraviolet B radiation through the alteration of microRNA expression in human HaCaT keratinocyte cells. Int. J. Mol. Med., 33: 934-942.
- Lee GT, Cha HJ, Lee KS, et al. (2014) Arctiin induces an UVB protective effect in human dermal fibroblast cells through microRNA expression changes. Int. J. Mol. Med., 33: 640-648.
- Bae S, Lee EJ, Lee JH, et al. (2014) Oridonin protects HaCaT keratinocytes against hydrogen peroxide-induced oxidative stress by altering microRNA expression. Int. J. Mol. Med., 33: 185-193.
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  Kim K, An S, Cha HJ, et al. (2012) Lenalidomide induces apoptosis and alters gene expression in non-small cell lung cancer cells. Oncol. Left., 5: 588-592.
- An IS, An S, Choe TO, et al. (2012) Centella asiatica protects against UVB-induced HaCaT keratinocyte damage through microRNA expression changes. Int. J. Mol. Med., 30: 1349-1356.
- An IS, An S, Kang SM, et al. (2012) Titrated extract of Centella asiatica provides a UVB protective effect by altering microRNA expression profiles in human dermal fibroblasts. Int. J. Mol. Med., 30: 1194-1202.
- Bae S, Kim SY, Jung JH, et al. (2012) Akt is negatively regulated by the MULAN E3 ligase.

  Cell Res., 22: 873-885.
- Bae S, Jeong HJ, Cha HJ, et al. (2012) The hypoxia-mimetic agent cobalt chloride induces cell cycle arrest and alters gene expression in U266 multiple myeloma cells. Int. J. Mol. Med., 30: 1180-1186.
- Bae S, Jung JH, An IS, et al. (2012) TRIAD1 is negatively regulated by the MDM2 E3 ligase.

  Oncol. Rep., 28: 1924-1928.
- Bae S, Jung JH, Kim K, et al. (2012) TRIAD1 inhibits MDM2-mediated p53 ubiquitination and degradation. FEBS Lett., 586: 3057-3063.
- Choi YM, An S, Lee EM, et al. (2012) CYP1A1 is a target of miR-892a-mediated post-transcriptional repression. Int. J. Oncol., 41: 331-336.

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- 김경숙, 한송희, 안인숙 외. (2016) UVA가 유도하는 산화적 스트레스에 Ellagic Acid가 미치는 인간 모유두 세포 보호효과. AJBC, 14: 191-200.
- 이송정, 한효선, 안인숙 외. (2016) Amentoflavone의 항염증 및 세포 보호 효과. AJBC, 14: 201-211.
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- 안인숙, 김지혜, 유회숙 외. (2007) B16F10 mouse melanoma 세포에서의 L-cysteine에 의한 멜라닌 생성 억제. 대한피부미용학회지, 5: 239-246.
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– Domestic and foreign patent

- [Domestic patent] method and device for setting reference point for skin clinical trial (2013.01.09)
- [Domestic Patent] Lipolysis Slimming Technology (2011.04.23)

2. Biography and results of the researcher

■ Seung-Bin Kwon (Senior Researcher, Doctor of Science)

Career

2009. 08	- 2012. 02	Professor, Kyungil University, Sunlin University, Suseong University
2011. 08	- 2012. 02	Member of industrial development customized curriculum, Department of Education, Science and Technology
2011. 03	- Present	Lifelong Member of the Korean Society of Beauty
2012. 01	- Present	Director of the Korean Society of Skin Care
2011. 03	- 2014. 02	Ph.D., Biotechnology, Konkuk University
2012. 03	- Present	Senior Researcher, Korea Institute of Dermatology

Awards

2007	International Beauty Industry Association Best Paper Award

Research Results

- International SCI-level academic papers

- Hahn HJ, Jung HJ, et al. (2016) Instrumental evaluation of anti-aging effects of cosmetic formulations containing palmitoyl peptides, Silybum marianum seed oil, vitamin E and other functional ingredients on aged human skin. Exp. Ther. Med., 12: 1171-1176.
- Choi SJ, Lee SN, et al. (2016) Biological effects of rutin on skin aging. Nt. J. Mol. Med., 38: 357-363.
- Cha HJ, Bae S, Kim K, et al. (2015) Overdosage of methylparaben induces cellular senescence in vitro and in vivo. J. Invest. Dermatol., 135: 609-612.
- Cha HJ, Lee KS, Lee GT, et al. (2014) Altered miRNA expression profiles are involved in the protective effects of troxerutin against ultraviolet B radiation in normal human dermal fibroblasts. Int. J. Mol. Med., 33: 957-963.

- Presentation of academic papers and conference posters

- 최민화, 배승희, 권승빈 외. (2015) Silica gel을 이용한 피부세포 수화능력 비교분석 연구. 대한 피부미용학회지, 13: 615-621.
- 차화준, 권승빈, 김지현 외. (2015) Image J 프로그램을 사용한 모공측정 및 노화도의 새로운 정 량분석법 개발과 화장품 인체적용시험에의 활용. 대한피부미용학회지, 13: 477-482.
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- 권승빈 외. (2012) A Comparative Study on Japanese and Korean Female College Students' Purchasing and Using Behaviors of Cosmetics. 대한미용과학회 대만국제학술대회 포스터발표.
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- 권승빈 외. (2011) 여대생의 미용관련태도별 신체만족도 요인 차이 분석. 대한미용과학회 하계학술대 회 포스터발표.
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- 권승빈, 이강태, 최성진, 이나경, 박현우, 이광식, 이건국, 안규중, 안인숙. (2013) 글리세린, 히 아루론산, 실리콘 오일이 피부의 보습 및 경피수분손실량에 미치는 효과. 대한피부미용학회지, 11: 761-768.
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- 권승빈, 안인숙. (2013) 인간 각질세포에서 센텔라아시아티카 특이적 마이크로알엔에이 발굴.

  대한피부미용학회지 추계학술대회 포스터 발표.

– Domestic and foreign patent

- [Domestic patent] method and device for setting reference point for skin clinical trial

  (2013.01.09)
- [Domestic Patent] Lipolysis Slimming Technology (2011. 04. 23)

■ 김 가 람 (연구원·공학박사)
■ 박 동 근 (연구원·약학박사)
■ 손 지 혜 (연구원·이학박사)
■ 이 보 미 (연구원·이학박사)
■ 류 지 영 (연구원·박사수료)
■ 최 성 진 (연구원·박사수료)
■ 최 영 민 (연구원·박사수료)
■ 권 유 정 (연구원·박사과정)
■ 김 기 쁨 (연구원·박사과정)
■ 김 지 예 (연구원·박사과정)
■ 신 상 훈 (연구원·박사과정)
■ 주 다 혜 (연구원·박사과정)
■ 강 지 윤 (연구원·한의학석사)
■ 강 태 훈 (연구원·이학석사)
■ 김 수 경 (연구원·이학석사)
■ 김 지 현 (연구원·이학석사)
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■ 손 미 령 (연구원·이학석사)
■ 손 유 림 (연구원·이학석사)
■ 이 정 주 (연구원·공학석사)
■ 이 현 화 (연구원·이학석사)
■ 전 효 정 (연구원·이학석사)
■ 정 성 희 (연구원·이학석사)
■ 정 은 영 (연구원·약학석사)
■ 조 고 은 (연구원·이학석사)
■ 조 문 희 (연구원·이학석사)
■ 조 아 령 (연구원·이학석사)
■ 최 수 영 (연구원·이학석사)
■ 최 춘 설 (연구원·이학석사)
■ 한 지 선 (연구원·이학석사)

3. Biography and research performance of the person in charge of reliability guarantee

■ Hyo-Sun Han (Reliability Assurance Officer, Doctor of Science)

Career

1998. 03 - 2003. 08	Bachelor of Law, Ewha Womans University
2009. 03 - 2011. 08	Master of Fine Arts, Chung-Ang University
2011. 03 - 2014. 06	Instructor, Dongbusan University, Korea College, Sungkyul University
2014. 09 - 2015. 08	Full-time Professor, Allong Practical College
2015. 09 - Present	Korean Dermatological Research Institute

Awards

2013년	Received a commendation from the judges
2014년	IKBF International Korean Beauty Festival Judge Award
2014년	Received a Citation from the International Beauty Artist's Skin Examination Board
2015년	Guangzhou K Beauty Education Training General Planning Achievement Award
2015년	Osan City Public Education Innovation「Early Bird」Education Business

Research Results

- Presentation of academic papers and conference posters

- 정지연, 한효선. (2014) 화장품의 경피 흡수에 대한 최신 연구 동향. 대한피부미용학회지, 12: 597-605.
- 구정은, 한효선, 송정희. (2013) 화장품에 사용되는 천연방부제 연구 동향. 대한피부미용학회 지, 11: 835-845.
- 구정은, 한효선, 황완균. (2011) 기초화장품의 올바른 사용방법에 관한 연구 -4종 세트와 2종 세 트 간 사용 효과 비교-. 대한피부미용학회지, 9: 1-12.
- 김경옥, 한효선, 황완균. (2011) 얼굴 형태와 두상에 따른 샤기와 스트록 커트에 관한 연구. 대한 피부미용학회지, 9: 1-12.
- 박유정, 한효선, 황완균. (2010) 방문 및 할인점 판매 화장품의 소비형태 비교연구. 대한피부미 용학회지, 8: 1-10.
- 김숙하, 한효선, 김성건 외. (2010) 벚나무 잎과 어린 가지 추출물의 항산화 활성효과 연구. 대 한피부미용학회지 8: 13-21.
- 김진아, 한효선, 장승희 외. (2010) 메디컬스킨케어를 통한 코의 블랙헤드 및 피지분비 억제 효 과. 대한피부미용학회지, 8: 149-160.
- 장승희, 한효선, 김진아 외. (2010) 스웨디쉬마사지가 체형 관리에 미치는 영향 – 하체를 중심 으로-. 대한피부미용학회지, 8: 41-51.

[Appendix 5] Equipment of Testing agency

1. General

Korea Institute of Dermatological Sciences adopted the 'Cosmetic Act' of the Ministry of Food and Drug Safety, 'Regulations on Designation of Inspection Institutions for Pharmaceuticals, Quasi-drugs, Cosmetics and Medical Devices,' 'Clinical Standards for Managing Clinical Trials,' Guidelines for Test Methods for Demonstrating Cosmetic Labeling and Advertising, Guidelines for the Validation of Functional Cosmetics, Law on Bioethics and Safety, Ministry of Health and Welfare, Based on the law, we have established and operated a research facility of approximately 227.79 $m^{2.}$.

The entire facility of Korea Institute of Dermatological Sciences is equipped with the optimal size, structure, equipment, layout, power, lighting, security, heating and cooling system, and ventilation facilities to minimize the interference affecting the reliability of the test and to satisfy the research needs. The entire clinical trial space is controlled by a constant temperature and humidity system.

In order to ensure the reliability of the test results, access to the test site is controlled and restricted, and each test room is properly separated to allow the test to be properly performed in each test system and test test area, and no cross contamination occurs.

All test and inspection facilities and facilities are regularly inspected and recorded according to the quality manual management system, and are operated only by researchers who meet the qualification requirements.

All work, including testing, is carried out in accordance with a documented Standard Operating Procedure (SOP) approved by the Director.

All data on the subjects are thoroughly managed in accordance with the 'Health Ethics and Safety Act' of the Ministry of Health and Welfare, and security management in the form of electronic data through computer programs for test subject management developed by the Korean Dermatological Institute.

A series of records, data, electronic data, computer servers, etc. of test inspections are securely stored in the research center's data storage room under security, and if they are disposed of before the expiration of the preservation period due to unavoidable reasons, they are recorded accordingly. In leaving. In addition, access to the computer server and access to the archives is allowed only to those authorized by the Research Director.

2. Main internal facilities

연구실명	규격 및 기타
세콤보안 및 폐쇄회로TV 보안섹터	SECOM and CCTV Security Sector
항온항습섹터	Constant Temperature and Humidity Sector
임상자료분석실	Clinical Data Analysis Room
임상효능평가실	Clinical Efficacy Room
유효성평가실	Efficacy Evaluation Room
안전성평가실	Safety Evaluation Room
기능성평가실	Functional Evaluation Room
자외선조사실	UV Irradiation Room
내수성평가실	Waterproof Evaluation Room
세포효능평가실	Cellular Efficacy Room
3차원 피부세포배양실	3D Skin Cell Culture Room
3차원 입체영상처리실	3D Image Processing Room
비임상시험 분석기기실	In vitro Experiment Equipment Room
촬영실	Studio
자료보관실	Data Storage Room
세안실	Washing Room
피시험자 대기실	Volunteer Waiting Room
피시험자 상담실	Volunteer Counseling Room
피시험자 탈의실	Volunteer Locker Room
회의실	Conference Room
연구원장실	Office for Director
연구원실	Office for Researchers
행정실	Administrative Office
현미경실	Microscope Room
암실 및 영상필름 분석실	Dark Room and Film Analysis Room
창고	Storage Room
분자표적신약연구실	Molecular Targeted Drug and Biomedical Research Lab

세포배양 및 세포분석실	Cell Culture and Analysis Room
DNA 및 유전자분석실	DNA and Gene Analysis Room
단백질 및 효소분석실	Protein and Enzyme Analysis Room
미생물배양 및 분석실	Microorganism Culture and Analysis Room
고기능성물질 스크리닝실	Highly Functional Biomaterial Screening Room
생리활성물질 분리정제실	Bioactive Material Isolation and Purification Room
초정밀소재분석실	Super Precisional Material Analysis Room
냉장냉동고 및 항온기실	Freezer and Incubator Room

3. Main test equipment

시험기기명	규격 및 기타
항온항습 냉난방공조시스템	Homsys, Korea
일반 냉난방시스템	
상수.폐수. 폐기물처리장치	
보안시스템	세콤
3차원 피부 및 바디 멀티 스캐닝 입체분석시스템	PRIMOS 3D Skin and Body Multiscanner Analyzing System, GFMesstechnik GmbH, Germany
3차원 얼굴 및 피부 프리미엄 스캐닝 입체분석시스템	PRIMOS Premium 3D Face and Skin Scanner Analyzing System, GFMesstechnik GmbH, Germany
3차원 얼굴 및 피부 라이트 스캐닝 입체분석시스템	PRIMOS Lite 3D Face and Skin Scanner Analyzing System, GFMesstechnik GmbH, Germany
자외선조사기	Solar Simulator, Solar Light Company, Inc., USA
피부분석시스템A	DUB Skin Scanner, Taberna Pro Medicum GmbH, Germany
피부분석시스템B	DermaLab USB, Cortex Technology, Inc., Denmark
피부분석기A	Robo Skin CS50, Inforward, Inc., Japan
피부분석기B	DMS II Colorimeter, Cortex Technology, Inc., Denmark
피부분석기C	Colorimeter CR-400/410, Konica Minolta, Inc., Japan

피부분석기D	Spectrophotometer CM-2600D, Konica Minolta, Inc., Japan
피부분석기E	Multi Dermasope Probes MPA5, Courage+ Khazaka Electronic GmbH, Germany
피부분석기F	Multiport Simulator 601-300W, Solar Light Company, Inc., USA
피부분석기G	Multi Gloss 268 PLUS, Konica Minolta, Japan
피부분석기H	분광광도계, Miravex,Ireland
피부분석기I	Epsilon E100, Biox Systems Ltd., UK
피부분석기J	Dermavision Pro, OptoBioMed Co., Kangwon, Korea
피부분석기K	KONG PC Camera, Bomtech, Korea
내수성시험용 욕조 및 기타	Korea/기타
촬영기기 및 조명장치, 기타	Korea/Japan/Germany/기타
피시험자 관리프로그램	자체개발, Korea
컴퓨터 서버 및 보안시스템	Korea/기타
회전형 점도계	Viscometer, Fungilab Inc., Spain
자외선 분광광도계	UV Spectrophotometer, Amersham Biosciences, Inc., USA
가시부 분광광도계	Spectrophotometer, Amersham Biosciences, Inc., USA
디지털 광학현미경	Digital Light Microscope, AMG, Inc., USA
광학현미경	Light Microscope, Olympus/Nikon, Japan
실시간 유전자 증폭반응장치	Real-Time PCR System, Bioer, Inc., China
유전자 증폭반응장치	PCR Machine, China/USA
유전자·단백질 이미지 분석장치	Image Analyzing System, Australia/USA
세포배양기	Skin Cell Incubator, Japan/Germany
액체질소 저장탱크	Liquid Nitrogen Tank, Germany/USA
시험관 혼합기	Vortex Mixer, Scientific Industries, USA
가열식·일반 자석교반기	Magnetic Mixer, Korea/Japan
가열식·일반 교반기	Shaker, Korea/Japan
고·중·저속 원심분리기	Centrifuge, Korea/Japan

대·중·소 냉장·냉동고	Refrigerator, Freezer, Korea
초저온 냉동고	Deep Freezer, Korea/Japan
가열/감온블럭장치	Heating/Cooling Block, Korea/Japan
증류수 제조장치	Water Purification System, Genesis Inc., Korea
초순수 제조장치	Mili-Q Intergral Water Purification System, Milipore Corp., USA
항온 수욕조	Water Bath, Korea/Japan
무균실험대	Clean Bench, Sejong Plus, Inc., Korea
대·중·소·아날로그 디지털저울	Balance, Korea/Japan/Germany
호모믹서	Homomixer, Korea/Japan
pH 측정기	pH Meter, Korea/Japan
자동피펫·멀티피펫	Automatic Micro Pipette / Multi Pipette, Gilson, Inc., USA
마이크로피펫	Micro Pipette, Gilson, Inc., USA
증기가압멸균기	Autoclave, Korea/Japan
기체 크로마토그래프 분석시스템	Gas Chromatograpy System, Agilent Technologies, Inc., USA
액체 크로마토그래프 분석시스템	High-Performance Liquid Chromatograpy System, Agilent Technologies, Inc., USA
박층 크로마토그래프 분석시스템	Thin Layer Chromatograpy System, Agilent Technologies, Inc., USA
자동분리 분석분획시스템	SepBox 2D-250, Sepiatec GmbH, Germany
초소량 분광광도계	Vis-UV Nanodrop, Maestrogen, Inc., USA
형광 마이크로플레이트 분석기	Fluorescence Microplate Reader, Molecular Devices, Inc., USA
마이크로플레이트 분석기	Microplate Reader, Bio-Rad, Inc., USA
형광현미경	Fluorescence Microscopy System, Carl Zeiss, Inc., Germany
DNA/RNA 혼성화 배양기	Micro DNA/RNA Hybridization Incubator, Robbins Scientific, Inc., USA
유전자칩 반응분석시스템	Array Hybridization System, Agilent Technologies, Inc., USA
유전자칩 스캐너	Array Scanner, Agilent Technologies, Inc., USA
유전자 전기영동시스템	DNA Electrophoresis System, Bio-Rad, Inc., USA
단백질 전기영동시스템	Protein Electrophoresis System, Bio-Rad, Inc., USA

전기영동 전원장치	Power Supply, Bio-Rad, Inc., USA
유전자 UV 분석기	UV Transilluminator, Korea/Japan
미생물 자동 동정장치	Sherlock Microbe Identification System, Midi, Inc., USA
대·중·소 미생물배양기	Microorganism Incubator, Korea/Japan
고·중·저속 진탕기	Shaking Incubator, Korea/Japan
강제 순환 건조기	Forced Convection Oven, Jeio Tech., Inc., Korea
겔 건조기	Gel Dryer, Bio-Rad, Inc., USA
대·중·소 전기 건조기	Electric Dryer, Korea/Japan
동결건조기	Freeze Dryer, Ilshin Bio Base, Inc., Korea
제빙기	Ice Maker, Ilshin Bio Base, Inc., Korea
저온냉장 실험챔버	Cold Chamber, Hanbaek Scientific, Co., Korea
진공농축기	Rotary Evaporator, Eyela, Inc., Japan
용출액 자동컬렉팅 시스템	Fraction Collector, KSC, Inc., Korea
초음파분쇄시스템	Sonication System, Sonic Vibra-Cell, Sonics and Materials, Inc., USA
필름 현상기	Medical Film Processor, Konica Minolta, Inc., Japan
기타 일상·비일상 실험에 필요한 시설 및 기구, 시약	다양

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