

DERMAPRO SKIN RESEARCH CENTER

Skin Primary Irritation Test in Humans

48 hours Patch Test

DSA-HSPIT001(18)-16031/8

Aug. 24, 2016

FOR
MEDIPOST Co., Ltd
21, Daewangpangyo-ro 644beon-gil, Bundang-gu,
Seongnam-si, Gyeonggi-do

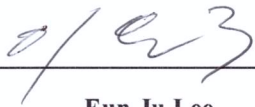
BY
DERMAPRO LTD.
Dermapro Skin Research Center
30 Bangbaejoongang-ro, Seocho-gu, Seoul, Korea 137-843

Final Report

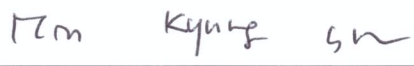
Skin Primary Irritation Test in Humans

Four materials

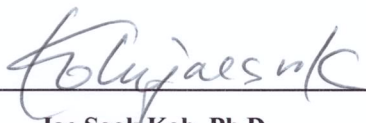
Investigator


Eun Ju Lee

Principal Investigator


Min Kyung Shin, M.D., Ph.D.

President


Jae Sook Koh, Ph.D.

Quality Assurance Statement

This study was conducted in accordance with the intent and purpose of Good Clinical Practice (GCP) regulations that originated in the Declaration of Helsinki, as appropriate. This study report has been reviewed to assure that it correctly describes the MFDS, PCPC guideline or Standard Operating Procedure (SOP) of DERMAPRO.

- ☐ Test title : Skin Primary Irritation Test in humans
- ☐ Test code : DSA-HSPIT001(18)-16031/8

Item	Date	Confirmation of Principal investigator
Study protocol	2016.06.23	2016.06.23
Delivery product	2016.07.06	2016.07.06
Confirmation of product information	2016.07.08	2016.07.08
Recruitment	2016.07.04 ~ 07.08	2016.07.08
Test period	2016.07.12 ~ 07.15	2016.07.15
Draft report	2016.07.29	2016.07.29
Final report	2016.08.24	2016.08.24

Aug. 24. 2016

Date

(-) 07222
Young Kyung Seo
Quality Assurance

toh
Jae Sook Koh, Ph.D.
President

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REPORT SUMMARY

Title	Skin Primary Irritation Test in Humans		
Purpose	To evaluate the irritation potential of the four materials on human skin		
Test center	DERMAPRO LTD.	Test period	Jul. 12, 2016~ Jul. 15, 2016
Report date	Aug. 24, 2016		
Safety Assessor	Min Kyung Shin, M.D., Ph.D. Scientific Director of Dermapro Skin Research Center		
Authentication of Test Center	DERMAPRO was validated by receiving a “QUALITY MANAGEMENT SYSTEM CERTIFICATE” (KS Q ISO 9001:2009 / ISO 9001:2008; <i>Certificate No.5855</i>) from the KTR Certification Center for providing contract research and consulting services on human skin safety and efficacy.		
Sponsor & Supervisor	MEDIPOST Co.,Ltd 21, Daewangpangyo-ro 644beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do		
Methods	<p><i>Subjects:</i> 30 healthy women (mean age 43.2 ± 6.9 yrs)</p> <p><i>Procedure:</i> 48 hrs single closed patch test on the upper back.</p> <p><i>Reading and interpretation:</i> Reactions were assessed at 30 mins and 24 hrs after patch removal by the dermatologist and principal researcher according to the modification of Frosch & Kligman (1979). All assessments were performed under standard lighting conditions.</p>		
Results	Among the four materials, one (#1) showed skin reaction of 1+ grade in a subject and the others did not induce any skin reaction in all subjects during the course of study.		
Conclusions	In respect of the primary irritation potential on human skin, these four materials can be considered that within the scope of the slight-irritation.		
Appendix	Skin characteristic of subjects, Result, Research members and facilities		

1. STUDY COORDINATOR

Monitor: Eun Su Jeon

Sponsor: MEDIPOST Co.,Ltd

2. INVESTIGATIVE PERSONNEL

Investigator: Eun Ju Lee

Principal Investigator: Min Kyung Shin, M.D., Ph.D.

3. CLINICAL RESEARCH STANDARD

This study was conducted according to applicable Good Clinical Practices (GCP) and the Standard Operating Procedures (SOPs) of Dermapro Skin Research Center.

4. PROTOCOL

The study protocol was followed with the consent agreement, subject selection and skin characteristics of subject attached in Appendix I.

5. SUBJECT

5.1. Principle of recruitment

The subjects must be clearly informed, verbally and in writing, regarding the nature of the study, the timetable, possible risks and constraints. The investigator will screen the participation form of the volunteer and subject selection will be based on the fulfillment of the study's inclusion and exclusion criteria.

The study inclusion and exclusion criteria are as follows:

5.2. Inclusion criteria

- 1) Healthy females aged 20 to 50 years.
- 2) Signed and informed consent; the purpose and the protocol of the study were explained to subjects.

- 3) Subjects agree to follow the conditions specified in the Study Information Sheet
- 4) Volunteers cooperative and available during the study period.

5.3. Exclusion criteria

- 1) Pregnancy or nursing condition or planning to become pregnant within six months.
- 2) Damaged skin, in or around the test site, which includes sunburn, tattoos, scars or other disfiguration of the test site.
- 3) Any active skin disease which may interfere with the aim(s) of the study
- 4) Taking medicine for which may interfere with the aim(s) of the study
- 5) Allergic to cosmetics, topical drug and usual sunlight exposure
- 6) In case of atopic dermatitis
- 7) Taking contraceptive, antihistaminic and anti-inflammatory drug
- 8) Chronic disease (diabetes, asthma, high blood-pressure).
- 9) Allergic to tapes
- 10) Participation in another simultaneous study
- 11) Participation in a previous study without an appropriate intervening period (six months) between studies.
- 12) Any difficult which may interfere with the aim of the study as the judgment of the investigator.

5.4. Prohibition and restriction

- 1) Contact with water on the test site is forbidden during attaching patch.
- 2) Use of anti-inflammatory drugs or antihistaminic or systemic steroids, by a general route, is forbidden throughout the duration of the study.

5.5. Subject withdrawal

After admission to the study, the subject may withdrawal at any time for any reason, but must report such reason fairly and accurately.

Subjects failing to complete the study will be identified, and whenever possible, a reason will be given. Subjects who drop out of the study will not be replaced.

- 1) They suffer any illness or accident or develop any condition during the study which

could affect the outcome of the study.

- 2) They suffer of any side effect occurred by test material during the study.
- 3) They do not follow the conditions of the Study Information Sheet or they no longer wish to participate in the study.
- 4) They could be dropped off from the study by investigator when they affect the outcome of the study.

6. STUDY SCHEDULE

Start Date: Jul. 12, 2016

Finish Date: Jul. 15, 2016

7. TEST MATERIAL

The following test materials were supplied from the sponsor for this study.

Table 1. Name of test materials supplied from sponsor

No	Product Name	Lot No.	Active ingredient	Type	Conc.
1	100% CM	MPCM1602	Effective proteins for prevent hair loss (100%)	Liquid	As is
2	50% CM	MPCM1602	Effective proteins for prevent hair loss (50%)	Liquid	As is
3	5% Essence	-	-	Essence	As is
4	Placebo	-	-	Essence	As is
5	Negative control	-	-	Liquid	As is

8. PROCEDURE

Patch test was performed in healthy subjects who had no history of allergenic contact dermatitis. The subjects sit in a relaxed normal position, the back slightly bent forwards. The test materials were applied to healthy skin on the back, which is to be free of ointments and excessive sebum. It is recommended that subjects take a shower or bath in the morning before testing. If necessary, the skin can be cleaned by alcohol. Sixteen microliters of the material was applied on a filter paper in chamber (Finn Chambers® on Scanpor, SmartPractice, Denmark) and fixed to the skin with adhesive tape. The

preferred test site was the upper back and the subjects should be informed about avoiding excessive exercise, showers, etc. to keep the test system dry.

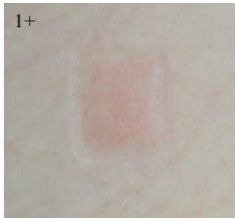
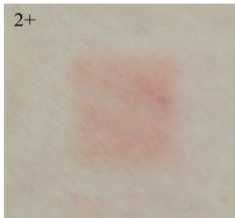


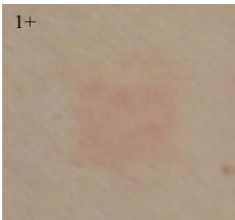


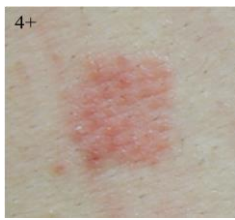
The patch test system was usually removed after 48 hours, as modified by Frosch & Kligman (1979)¹⁾, and readings were done 30 minutes after removal of the strips (day 2) and after 24 (day 3) or 48 (day 4) hours. All assessments were performed under standard lighting conditions by the responsible expert researcher or dermatologist. Subjects were instructed to keep the test sites dry over the application period.

8.1. Readings and interpretation

Readings made at day 2 and 3 and reactions were graded according to the modification of Frosch & Kligman (1979)¹⁾.

Patch test reactions are classified and recorded as follows (Table 2).

Table 2. Clinical standard photographs of visual assessment for human patch test

Description	Slight erythema, either spotty or diffuse	Moderate uniform erythema	Intense erythema with edema	Intense erythema with edema & vesicle
After 30 min	1+ 	2+ 	3+ 	4+ 
After 24 hr	1+ 	2+ 	3+ 	4+ 

9. DATA ANALYSIS

Reaction grade were derived by application of the following formulae. And the result was judged by the criteria in Table 3.

$$\text{Response} = \frac{\sum (\text{Grade} \times \text{No. of Responders})}{4 (\text{Maximum grade}) \times n (\text{Total Subjects})} \times 100 \times 1/2$$

Table 3. Human primary irritation index for cosmetic products¹¹⁾

Range of Response	Criteria
$0.00 \leq R < 0.87$	Slight
$0.87 \leq R < 2.42$	Mild
$2.42 \leq R < 3.44$	Moderate
$3.44 \leq R$	Severe

10. RESULT

10.1. Skin characteristics of subjects

For conducting this study, 30 subjects were recruited. The data of 30 subjects (average 43.2 ± 6.9 yrs) was collected (Appendix I). The physical characteristics of the study subjects were summarized in Table 4.

Table 4. Skin characteristics of subjects (n=30)

Item	Classification	Frequency (n)	Percentage (%)
Skin Type	Dry skin	5	16.67
	Normal skin	10	33.33
	Oily skin	2	6.67
	Dry to oily skin	13	43.33
	Problem skin	0	0.00
Irritability	Yes	0	0.00

	No	30	100.00
Stinging	Yes	0	0.00
	No	30	100.00
Side effects by cosmetics	Yes	0	0.00
	No	30	100.00
Allergy*	Food allergy	0	0.00
	Metal allergy	2	6.67
	Photoallergy	0	0.00
	Extra allergy	0	0.00
	No	28	93.33
Skin diseases	Acne	0	0.00
	Atopy	0	0.00
	Hair loss	0	0.00
	Extra skin diseases	0	0.00
	No	30	100.00
Tight feeling	Yes	0	0.00
	No	30	100.00
Taking supplements	Taking korean herb medicines	0	0.00
	Taking nutrients	7	23.33
	Taking extra supplements	0	0.00
	No	23	76.67
Smoking	No	29	96.67
	Less than 10 pieces	1	3.33
	More than 10 pieces	0	0.00
Menstrual cycle	During menstruation	5	16.67
	Within 1 week before menstruation	3	10.00
	Within 1 week after menstruation	8	26.67
	The others	14	46.67

*Metal allergy did not affect the test results.

10.2. Results

Data table for the grades of the skin reactions at 30 minutes and 24 hours after patch removal is found in Appendix II.

Among the four materials, one (#1) showed skin reaction of 1+ grade in a subject and the others did not induce any skin reaction in all subjects during the course of study.

The score of the skin reaction is as follows:

Table 5. Results of skin primary irritation test on humans (n=30)

No	Test material	No. of Responder	48 hrs				72 hrs				Reaction Grade		
			1+	2+	3+	4+	1+	2+	3+	4+	48h	72h	Mean
1	100% CM	1	1	-	-	-	-	-	-	-	0.8	0.0	0.4
2	50% CM	0	-	-	-	-	-	-	-	-	0.0	0.0	0.0
3	5% Essence	0	-	-	-	-	-	-	-	-	0.0	0.0	0.0
4	Placebo	0	-	-	-	-	-	-	-	-	0.0	0.0	0.0
5	Negative control	0	-	-	-	-	-	-	-	-	0.0	0.0	0.0

11. CONCLUSION

In respect of the primary irritation potential on human skin, these four materials can be considered that within the scope of the slight-irritation.

12. REFERENCE

- 1) Frosch PJ, Kligman AM. The soap chamber test. A new method for assessing the irritancy of soaps. *J Am Acad Dermatol.* 1979 1(1): 35-41.
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- 11) An SM, Ham H, Choi EJ, Shin MK, An SS, Kim HO, Koh JS. Primary irritation index and safety zone of cosmetics: Retrospective analysis of skin patch tests in 7,440 Korean women during 12 years. *Int J Cosmet Sci.* 2014 36(1): 62-67.
- 12) Loretz LJ. Safety Evaluation Guidelines. Personal Care Products Council 2014

APPENDIXES

APPENDIX I

SKIN CHARACTERISTIC OF SUBJECTS

Appendix I. Skin characteristics of subjects

No.	Name	Age	Sex	Skin type	Irritability	Stinging sensation	Side effects of cosmetics	Allergy	Skin diseases	Tight feeling	Taking supplements	Smoking	Menstrual cycle
1	H*M	44	F	4	2	2	2	5	5	2	4	1	3
2	K*H	47	F	4	2	2	2	5	5	2	4	2	4
3	P*O	46	F	2	2	2	2	5	5	2	4	1	1
4	K*J	43	F	1	2	2	2	5	5	2	4	1	3
5	K*Y	44	F	2	2	2	2	5	5	2	2	1	2
6	C*Y	40	F	3	2	2	2	5	5	2	4	1	1
7	P*A	44	F	4	2	2	2	5	5	2	2	1	4
8	P*J	28	F	4	2	2	2	5	5	2	4	1	4
9	J*H	45	F	2	2	2	2	5	5	2	4	1	1
11	N*S	42	F	4	2	2	2	5	5	2	4	1	2
12	H*H	48	F	2	2	2	2	5	5	2	4	1	4
13	Y*S	25	F	4	2	2	2	2	5	2	4	1	4
14	J*N	49	F	1	2	2	2	5	5	2	4	1	1
15	P*H	48	F	2	2	2	2	5	5	2	2	1	3
16	S*R	43	F	4	2	2	2	5	5	2	4	1	3
17	L*S	46	F	2	2	2	2	5	5	2	2	1	4
18	L*J	45	F	4	2	2	2	5	5	2	4	1	4
19	L*J	45	F	2	2	2	2	5	5	2	4	1	3
20	K*M	48	F	4	2	2	2	5	5	2	4	1	4
21	K*S	47	F	2	2	2	2	2	5	2	2	1	4
22	K*S	40	F	3	2	2	2	5	5	2	4	1	2
23	K*S	47	F	1	2	2	2	5	5	2	4	1	3
24	L*S	50	F	1	2	2	2	5	5	2	4	1	4
25	K*J	44	F	4	2	2	2	5	5	2	4	1	1
26	P*Y	49	F	4	2	2	2	5	5	2	2	1	4
27	K*K	48	F	4	2	2	2	5	5	2	4	1	4
28	K*J	49	F	2	2	2	2	5	5	2	4	1	4
29	C*J	34	F	2	2	2	2	5	5	2	2	1	3
30	P*Y	44	F	4	2	2	2	5	5	2	4	1	3
31	C*S	23	F	1	2	2	2	5	5	2	4	1	4

Total Subject Number = 30

1)Skin type: dry(1), normal(2), oily (3), dry to oily(4), problematic skin(5), **2)Irritability:** yes(1), no(2) **3)Stinging sensation:** yes(1), no(2), **4)Side effects of cosmetics:** yes(1), no(2), **5)Allergy:** food(1), metal(2) photoallergy(3), extra(4), none(5), **6)Skin disease:** acne(1), atopy;(2), hair loss(3), extra(4), none(5), **7)Tight feeling:** yes(1), no(2), **8)Taking supplements :** taking korean herb medicines(1),taking nutrients(2), extra(3), none(4), **9)Smoking(day):** no(1), less than 10 pieces(2), more than 10 pieces(3), **10)Menstrual cycle :** within 1 week before menstruation(1), during menstruation(2), within 1 week after menstruation(3), the others(4)

APPENDIX II

RESULT

Appendix II. Result sheet

No.	Age	Hr	Test materials				
			1	2	3	4	5
1	44	48 72					
2	47	48 72					
3	46	48 72					
4	43	48 72					
5	44	48 72					
6	40	48 72					
7	44	48 72					
8	28	48 72					
9	45	48 72					
11	42	48 72					
12	48	48 72					
13	25	48 72					
14	49	48 72					
15	48	48 72					
16	43	48 72					
17	46	48 72					
18	45	48 72					
19	45	48 72					
20	48	48 72					
21	47	48 72					
22	40	48 72					
23	47	48 72					
24	50	48 72					
25	44	48 72					
26	49	48 72	+				
27	48	48 72					
28	49	48 72					
29	34	48 72					
30	44	48 72					
31	23	48 72					



APPENDIX III

RESEARCH MEMBERS & FACILITIES

APPENDIX III

RESEARCH MEMBERS & FACILITIES**1. COMPANY INFORMATION**

Company name	DERMAPRO LTD.
Business fields	Human clinical evaluation of efficacy and safety for cosmetics, cosmeceuticals, toiletries and neutraceuticals
Head office	30, Bangbaejoongang-ro, Seocho-gu, Seoul, Korea 137-843
CEO	Jae Sook Koh, Ph.D.
Scientific Director	Jae Sook Koh, Ph.D.
	Min Kyung Shin, M.D., Ph.D.
	Sang Jun Lee, M.D., Ph.D.

2. CLINICAL EVALUATION FIELDS

Classification	Test Item
Efficacy Evaluation for MFDS (I)	Human Skin Wrinkle Test (I)
	Human Skin Lightening Effect Test (I)
	Sun protection of UVB, UVA Test
	Water Proof SPF Test
	Hair Loss Prevention and Growth Effect Test (I)
	Human Skin Wrinkle Test of Food Supplement
	Human Skin Lightening Effect Test of Food Supplement
	Human Skin Hydration Test of Food Supplement
	Acne Skin Improvement Effect Test
Efficacy Evaluation (II)	Human Skin Wrinkle Test (II)
	Human Skin Lightening Effect Test (II)
	Sweat Resistance SPF Test
	Human Skin Firming & Sagging Test
	Body Slimming Effect Test
	Human Skin Water Holding Capacity Test of 24 Hours

	Human Skin Scale Test
	Human Skin Radiance & Gloss Test
	Damaged Skin Recovery Effect Test (I), (II), (III)
	Cleansing Effect Test
Body Evaluation	Human Breast Firming Test
	Cellulite Reduction Test
Make-Up Evaluation	Evaluation of Lip Products
	Cleansing Effect Test
	Evaluation of Make-up
	Evaluation of Mascara
Hair & Scale Evaluation	Hair Loss Prevention and Growth Effect Test (II)
	Evaluation of Hair products
	Eyelash Growth Effect Test
	Hair Dandruff and Itching Improvement Effect Test
	Human Hair <i>ex vivo</i> Test
	Scalp condition Test
Safety Evaluation	Skin Primary Irritation Test
	Skin Repeat Insult Patch Test
	Skin Sting Test
	Skin Photo-irritation Test
	Skin Cumulative Irritation Test
	Eye Tolerance Test
	Eye Rim Use Test
	Skin Adverse Reaction Test
	Skin Usage Test
	Skin Photo-Sensitization Test
Antimicrobial Efficacy Evaluation	Skin Antimicrobial Efficacy Test
Sensory Evaluation	Sensory Test

Food Supplement	Human Skin Wrinkle Test of Food Supplement
	Human Skin Lightening Effect Test of Food Supplement
	Human Skin Hydration Test of Food Supplement
<i>in vitro</i> Assay	Skin Lightening Effect Test
	Anti-wrinkle Effect Test
	Antioxidant Activity Test
	Skin Absorption Test
	<i>in vitro</i> SPF Test

3. RESEARCH TEAM

1) Chief of Research : Min Kyung Shin; Dermatologist

Graduated with a M.D., Ph.D. in Medical Science from College of Medicine, Kyung Hee University

2) Researcher : Eun Ju Lee

Certificate of course completion with a Master's degree in Immunology from Seoul National University

3) Co-researcher : Eunseok Lee

Graduated with a Associate's degree in Food Science & Bio Technology from Ansan College of Technology

4) QA team

Young Kyoung Seo : Efficacy Team, QA Team

Graduated with a Master's degree in Physiology from College of Medicine, Chung-Ang University

Ji Hwoon Baek :

Graduated with a Ph.D. in Medical Science from School of Medicine, Yonsei University

4. RESEARCH FACILITIES

Device	Description
DermaScan [®] C Ver.3	To visualize layers of the skin and subcutaneous tissue and to make approximate dimensional measurements
Neurometer [®] CPT	To measure perception and pain thresholds
Facial ion Steamer [®]	To Activate the hydrophilic factor and replenish water in skin
Periscan PIM II [®] Laser Doppler Perfusion Imaging system	To measure the circulation of microvessels
SquameScan [®] 850A	To measure the desquamation of the skin
Mexameter [®] MX 18	To measure the melanin and the erythema index of the skin
Spectrophotometer [®] CM-2500d	To measure the Lightness (L*), Green-Red (a*) and Blue-Yellow (b*) of the skin
Cutometer [®] MPA 580	To measure the viscoelasticity of the skin for face
Reviscometer [®]	To measure the reviscoelasticity of the skin
Sebumeter [®] SM 810	To measure the sebum content variation in the stratum corneum
Corneometer [®] CM 825	To measure the water content variation in the stratum corneum
Moisturemeter [®] SC	To measure the water content variation in the stratum corneum
Moisturemeter [®] D	To measure the water content variation in the dermis
Skin-pH-Meter [®] pH 900	To measure the pH variation in the stratum corneum
Tewameter [®] TM 300	To measure the transepidermal water loss
Vapometer [®]	To measure the transepidermal water loss in the stratum
Skin Visiometer [®] SV 600	To analyze the skin roughness
UVB Irradiator	To induce artificial pigmentation
Radiometer VLX-3W	To measure the UV A and B irradiance
Photometer/Radiometer PMA2100	Detector
One port solar simulator LS-1000	To measure the SPF & PA value

Multiport Solar UV Simulator (601-300W)	To measure the SPF & PA value
Ultraviolet Meter Model 3D-600	Detector
Sauna room system	To use for SPF/PA test (sweat resistance)
Whirlpool massage system	To use for SPF/PA test (water proof)
Inbody [®] 330	To measure the body mass
Cometech QC-508E	To analyze hair length force, tension, extension and pushing force
Digital still camera DSC-S75	To take a picture of the skin
Digital still camera D300	To take a picture of the skin
Digital still camera D40	To take a picture of the skin
Digital still camera D90	To take a picture of the skin
Visioscan [®] VC 98	To estimate the desquamation and the sebum
Facial stage [®] DM 3	To take a picture of face under wood lamp and fluorescent light
ThemaCam T360	To measure a temperature on the skin
Charm View [®]	To examine the skin surface
Moire topography	To take a picture of the skin
Digital camera Powershot A520	To take a picture of the hair
Trichogram system (Trichoscan professional ver. 2.0)	To evaluate the hair loss
Folliscope2.8 [®]	To evaluate the hair loss
Environmental control unit (DKA-3U)	To maintain the temperature and humidity
Environmental control unit (BCTH-A075SU)	To maintain the temperature and humidity
Environmental control unit (HT-A3GG3)	To maintain the temperature and humidity
Image Analyzer (Image-pro [®] plus 5.1)	To analysis the image
Vivascope [®] 1500	To take a picture of the melanin

PRIMOS [®] face & body	To visualize an exact 3D image in vivo measurement of human body skin surface
PRIMOS [®] premium	To visualize an exact 3D image in vivo measurement of human facial skin surfaces
PRIMOS [®] lite	To visualize an exact 3D image in vivo measurement of human body skin surface
PRIMOS [®] shapescan	To visualize an exact 3D image in vivo measurement of human facial skin surfaces
AramoTS [®]	To take a picture of the human body skin surface
VISIA [®]	To take a picture of face under wood lamp and fluorescent light
Glossmeter [®]	To measure the gloss of the skin
DERMALAB [®]	To measure the water content variation
VisioLine [®]	To analyze the skin roughness
Radioscan	To measure the skin transparency
NeoScope JCM-5000 [®]	To scan electron microscope
Inbody [®] S10	To measure body (intracellular and extracellular water) water state
ECOSKIN [®]	To analyze an porphyrin and photoaging value in skin surface image
SLIT LAMP [®] (SL-7F)	To visualize an cornea image in direct Installation test
SPOT THERMOMETER [®] (HT-20)	To measure the skin temperature
Universal Testing Machine	To measure the tensile load, combing force, frictional force, stiffness and bending(flexural) force of hair
Hair luster system	To evaluate the hair luster ring
UV irradiation system	To detract the hair by UVB
Hair retentivity chamber	To evaluate the formation and maintenance of hair curling
Moisture analyzer (XM-60-HR)	To measure the moisture content of hair
Epsilon	To capture dielectric permittivity image
Janus	To take a picture of face under wood lamp and fluorescent light
F-ray	To take a picture of the skin

Dermal Torque Meter DTM310	To measure the viscoelasticity of the skin
Torsional Ballistometer BLS780	To measure the viscoelasticity of the skin
Antera 3D CS	To evaluate the color on the skin
Translucency meter	To measure the translucency on the skin

5. RESEARCH ACCOMPLISHMENT

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