

OATC-190424-GOK-KR0001

# Clinical Trial Result Report

‘Gaoku hair gloss treatment shampoo and  
other 4 Type’

Skin Patch Primary Irritation Test

Requesting Institute: GOKU Corp.

08. 05. 2019

# Contents

|   |    |
|---|----|
| Submission Letter.....  | 3  |
| Information on Testing Institute and Requesting Institute ..... | 4  |
| Quality Assurance Statement.....                                | 5  |
| Clinical Trial Results Summary.....                             | 7  |
| 1. Test Objective.....  | 9  |
| 2. Test Product Information.....                                | 9  |
| 3. Institutional Review Board(IRB) Assessment.....              | 9  |
| 4. Selection of Subject.....                                    | 10 |
| 5. Test Method.....   | 11 |
| 6. Test Results.....  | 13 |
| 7. Results and Conclusion.....                                  | 15 |
| 8. References.....  | 16 |
| Appendix 1. Subject Information.....                            | 17 |
| Appendix 2. Test Product Ingredients.....                       | 18 |
| Appendix 3. Results of Determination.....                       | 20 |
| Main Equipment of the Testing Institute.....                    | 25 |
| Researcher CV.....  | 27 |
| Research Performance.....                                       | 30 |

# Submission Letter

The OATC Skin Clinical Trial Center received consignment for the primary irritation testing of the 'Gaoku hair gloss treatment shampoo and other 4 Type' skin patches requested by GOKU Corp. and following the cosmetics guideline of the Ministry of Food and Drug safety, Declaration of Helsinki and the OATC Skin Clinical Trial Center's standard operation procedure(SOP), we faithfully carried out the test and report the results as follows:

08. 05. 2019

Testing Institute : OATC Co., Ltd. Skin Clinical Trial Center      CEO      Sang Go



Research      OATC Co., Ltd. Skin Clinical      Vice      Won Kyu  
Investigator : Trial Center      President



# Information on the Testing Institute and Requesting Institute

|                  |  |
|------------------|--|
| Test Name        | 'Gaoku hair gloss treatment shampoo and other 4 Type' Skin Patch Primary Irritation Test |
| Test Control No. | OATC-190424-GOK-KR0001   |
| Test Period      | 24. 04. 2019 ~ 26. 04. 2019  |
| Report Date      | 08. 05. 2019   |

|                      |                |  |
|----------------------|----------------|--|
| Requesting Institute | Name           | GOKU Corp.   |
|                      | Address        | 316, 127, Sohyang-ro, Bucheon-si, Gyeonggi-do, Republic of Korea |
|                      | Contact Person | Hyo-Jung Son   |
|                      | Phone No.      | 070-4110-6869  |
| Testing Institute    | Name           | OATC Co., Ltd. Skin Clinical Trial Center                        |
|                      | Address        | 1130, Beoman-ro, Geumcheon-gu, Seoul, Republic of Korea          |
|                      | Name of Head   | Sang Goo Bang  |

|                       |                   |   |
|-----------------------|-------------------|---|
| Research Investigator | Name              | Won Kyu Hong                              |
|                       | Associated Entity | OATC Co., Ltd. Skin Clinical Trial Center |

# Quality Assurance Statement

|                  |  |
|------------------|--|
| Test Name        | 'Gaoku hair gloss treatment shampoo and other 4 Type' Skin Patch Primary Irritation Test |
| Test Control No. | OATC-190424-GOK-KR0001   |
| Test Period      | 24. 04. 2019 ~ 26. 04. 2019  |

This clinical trial was conducted in accordance with the test plan in consultation with the client, the cosmetics guidelines of the Ministry of Food and Drug safety, Declaration of Helsinki, the OATC Skin Clinical Trial Center Standard Operation Procedure(SOP), and the test results have been faithfully reflected. In addition, all procedures of this test were checked by a quality assurance officer.

1. Do you keep the basic documents (multiple selection possible)?

- ☒ Test plan
 ☒ Contract
 ☒ Agreement
 ☒ Case Report Form (CRF)
 ☒ Tester resume
 ☒ Survey for subject
 ☐ Blind release procedure
 ☒ Subject compensation regulation
 ☐ Reports of serious adverse reaction

2. Summary of test procedure

| Division      | Number of Subjets               |
|---------------|---------------------------------|
| Plan          | Over 30                         |
| Participating | 31                              |
| Dropped out   | 0 / reason for dropping out ( ) |
| Completed     | 31                              |

3. Did the test for the clinical trial proceed according to the test plan?

- ☒ Yes ☐ No

4. Did the test proceed according to the Standard Operation Procedure(SOP)?

- ☒ Yes ☐ No

5. Did all subjects sign and date their handwritten consent to participate in the approved study?

- ☒ Yes ☐ No

(If receiving consent from an agent: ☐ Yes ☐ No,  
reason:\_\_\_\_\_)

6. Has there been any abnormal occurrence, severity, or specific changes to note?

(If yes, attach and submit)

☐ Yes ☒ No

7. Is the subject's information in the Case Report Form (CRF) (multiple selection possible)?

☒ Subject initial ☒ Date of birth ☒ Subject gender ☒ Subject age

8. Are the various documents related to the clinical application research stored in a separate safe place?

☒ Yes ☐ No

08. 05. 2019



Research Investigator: Won Kyu Hong



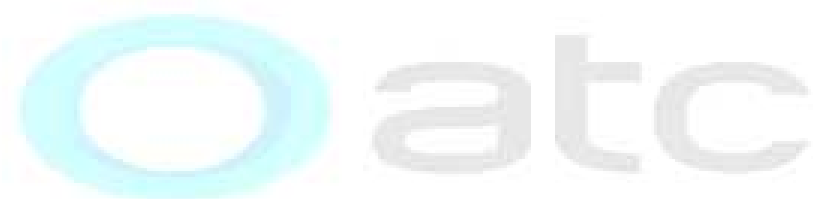
Quality Assurance Officer: Eun Ji Lim



# Clinical trial Results Summary

|                  |  |                       |                                     |                       |
|------------------|--|-----------------------|-------------------------------------|-----------------------|
| Test Name        | 'Gaoku hair gloss treatment shampoo and other 4 Type' Skin Patch Primary Irritation Test   |                       |                                     |                       |
| Test Control No. | OATC-190424-GOK-KR0001   | Testing Institute     | OATC Skin Clinical Trial Center     |                       |
| Test Period      | 24. 04. 2019 ~ 26. 04. 2019  |                       |                                     |                       |
| Test Product     | Gaoku hair gloss treatment shampoo<br>Gaoku hair mask<br>Gaoku hair essence<br>Gaoku intensive serum<br>Gaoku intensive mist   |                       |                                     |                       |
| Subjects         | Adults aged 20~60 who conform to the inclusion criteria and do not apply to the exclusion criteria<br>Valid evaluation number of people : 31, Drop-out people: 0   |                       |                                     |                       |
| Test Method      | 1. Area applied<br>Applied to flat areas in the back of the subject avoiding the spine area and areas with discoloring or skin damage<br>2. Evaluation<br>Visual assessment by dermatologist<br>3. Determine occurrence of irritation<br>Frosch & Kligman, CTFA guideline, Draize method were referenced for determination |                       |                                     |                       |
| Test Results     | Test Product Name  | Skin irritation index | Irritation evaluation <sup>1)</sup> | Remarks               |
|                  | Gaoku hair gloss treatment shampoo   | 0.00                  | No irritation                       | Judged non-irritating |
|                  | Gaoku hair mask  | 0.00                  | No irritation                       | Judged non-irritating |
|                  | Gaoku hair essence   | 0.00                  | No irritation                       | Judged non-irritating |
|                  | Gaoku intensive serum  | 0.00                  | No irritation                       | Judged non-irritating |
|                  | Gaoku intensive mist   | 0.00                  | No irritation                       | Judged non-irritating |

|            |  |                       |
|------------|--|-----------------------|
|            | <sup>1)</sup> Irritation evaluation is classified according to the determination Table   |                       |
|            | Skin Irritation Index  | Irritation Evaluation |
|            | 0.00 ~ 0.25  | No irritation         |
|            | 0.26 ~ 1.00  | Mild irritation       |
|            | 1.01 ~ 2.50  | Medium irritation     |
|            | 2.51 ~ 4.00  | Strong irritation     |
| Conclusion | The test products 'Gaoku hair gloss treatment shampoo', 'Gaoku hair mask', 'Gaoku hair essence', 'Gaoku intensive serum', 'Gaoku intensive mist' commissioned by GOKU Corp. were applied for 24 hours and after removing it, they were visually evaluated, 30 minutes and 24 hours after removal, by a dermatologist and found to be non-irritating. |                       |





## 1. Test Objective

This test was conducted to evaluate primary irritation 'Gaoku hair gloss treatment shampoo and other 4 Type' skin patch provided by requesting institute GOKU Corp..

## 2. Test Product Information

### 1) Test product information

Table 1. Test Product Information

| Test Product Name                  | Test Product Control No. | Form                   |
|------------------------------------|--------------------------|------------------------|
| Gaoku hair gloss treatment shampoo | 190424-K-143             | Pink transparent mucus |
| Gaoku hair mask                    | 190424-K-144             | Ivory cream            |
| Gaoku hair essence                 | 190424-K-142             | Transparent oil liquid |
| Gaoku intensive serum              | 190424-K-140             | Transparent oil liquid |
| Gaoku intensive mist               | 190424-K-141             | Transparent liquid     |

### 2) Maintenance and storing of test product

When the test products are received, the information is recorded in the sample ledger, then stored in the sample storage room for 1 month after testing. Test products distributed to subjects are retrieved at the end of the testing period and are all disposed without storing.

### 3) Test product safety

The requesting institute is responsible for any adverse reaction from the test products during the test period and must provide compensation. However, medical check-up, examination, hospital bills that are not related to this test shall be borne by the subjects.

## 3. Institutional Review Board(IRB) Assessment

### 1) The clinical trial regulation

This clinical trial was conducted ethically based on the Declaration of Helsinki and in Korea "Bioethics and Biosafety Law".

### 2) Institutional Review Board(IRB) Assessment

This clinical trial was submitted to the Institutional Review Board and was approved on 17. 04. 2019. There were no specific changes and the end of the study was reported

to the Institutional Review Board after completion of the study.

#### 4. Selection of Subject

##### 1) Inclusion Criteria

- (1) Adult men and women between the ages of 20~60
- (2) Fully understands the explanation provided by the research investigator his assigned personnel and is able to prepare and sign the consent form voluntarily
- (3) Healthy person who does not have rapid or chronic physical disease including skin disease
- (4) Who can be followed during the test period

##### 2) Exclusion Criteria

- (1) Women who are pregnant or lactating and women who are potentially pregnant
- (2) Those who use steroid containing external preparations for the treatment of skin disease for over 1 month
- (3) Those who have taken the same test less than 3 months ago
- (4) Sensitive, overly sensitive skin holders
- (5) People who have spots, acne, erythema, pore dilatation on the test site
- (6) Anyone else who the research investigator deems unsuitable for the test

##### 3) Drop-out Criteria

In the following cases, the researcher suspended the test cases, excluded them from the test results and they were record as such in the final report.

- (1) When the subject expressed desire to stop participation
- (2) Skin ailments or adverse reactions appeared on the test area
- (3) If the subject experienced excessive UV exposure to the test site during the test period or due to excessive drinking, smoking causing difficulties with the evaluation
- (4) If the subject is difficult to follow-up due to personal circumstances during the test

##### 4) Confidentiality agreement and obligation to be sincere

- (1) The confidentiality of the subject participating in the study is guaranteed. However, test data may be used to the extent of medical, academic research or marketing purposes to the subject's identity not being revealed.
- (2) The subject must keep all information obtained through this test confidential until the end of the test.

(3) All subjects participating in the test must prepare the documents sincerely.

5) Selection of subjects

This human body application test was conducted on 31 adult men and women between the ages of 20~60 who met the selection standard and were not applicable for the exception standard.

## 5. Test Method

This clinical trial was conducted in a temperature/humidity controlled area (indoor temperature 20~25℃, humidity 40~60%) within the OATC Co., Ltd. Skin Clinical Trial Center.

1) Test Method

(1) Test product patch area

Flat area of the subject on the back but avoiding the spine area and areas where there is no skin discoloration or skin damage.

(2) Test method

The subject's back is cleaned with 70% ethanol and dried then the test product 'Gaoku hair gloss treatment shampoo' is diluted to 1% concentration using 1<sup>st</sup> sterilized distilled water then fixed on the skin for 24 hours.

The subject's back is cleaned with 70% ethanol and dried then the test product 'Gaoku hair mask' is diluted to 1% concentration using 1<sup>st</sup> sterilized distilled water then fixed on the skin for 24 hours.

The subject's back is cleaned with 70% ethanol and dried then the test product 'Gaoku hair essence' is loaded with IQ chamber 20 $\mu$ l then fixed on the skin and applied for 24 hours.

The subject's back is cleaned with 70% ethanol and dried then the test product 'Gaoku intensive serum' is loaded with IQ chamber 20 $\mu$ l then fixed on the skin and applied for 24 hours.

The subject's back is cleaned with 70% ethanol and dried then the test product 'Gaoku intensive mist' is loaded with IQ chamber 20 $\mu$ l then fixed on the skin and applied for 24 hours.

(3) Determination of irritation

The existence of skin irritation was assessed by a dermatologist at 30 minutes and 24 hours after removal of the skin patch following determination standards. Skin reaction and skin irritation index was calculated based on the Frosch & Kligman and CTFA guidelines and the Draize method was applied to the skin irritation index to categorize the degree of skin irritation for test substances. (Table 2 ~ 3)

Table 2. Skin Irritation Evaluation Criteria

| Symbol | Grade | Evaluation Criteria                       |
|--------|-------|---|
| +      | 1     | Slight erythema, either spotty or diffuse |
| ++     | 2     | Moderate uniform erythema                 |
| +++    | 3     | Intense erythema with edema               |
| ++++   | 4     | Intense erythema with edema & vesicles    |

※Skin Irritation Index Formula

Skin Irritation Index

$$= \frac{\left[ \left( \frac{\sum_{i=1}^n \text{Evaluation Value}}{n(\text{Number of Test Subjects})} \right)_{30min} + \left( \frac{\sum_{i=1}^n \text{Evaluation Value}}{n(\text{Number of Test Subjects})} \right)_{24hrs} \right]}{m(\text{Number of times evaluated})}$$

Table 3. Skin Patch Test Results Determination Table

| Skin Irritation Index | Irritation Evaluation |
|-----------------------|-----------------------|
| 0.00 ~ 0.25           | No irritation         |
| 0.26 ~ 1.00           | Mild irritation       |
| 1.01 ~ 2.50           | Medium irritation     |
| 2.51 ~ 4.00           | Strong irritation     |

## 2) Abnormal Evaluation

At every visit, researchers conducted visual assessment of the skin around the tested area and checked for any degree of symptoms. In addition, the subjects were instructed to report immediately when they felt any adverse reaction during the test period. If a skin adverse reaction occurs, researchers must inform the research investigator immediately and the research investigator must check the symptom to determine the appropriate action and whether to continue participation of the test.

## 6. Test Results

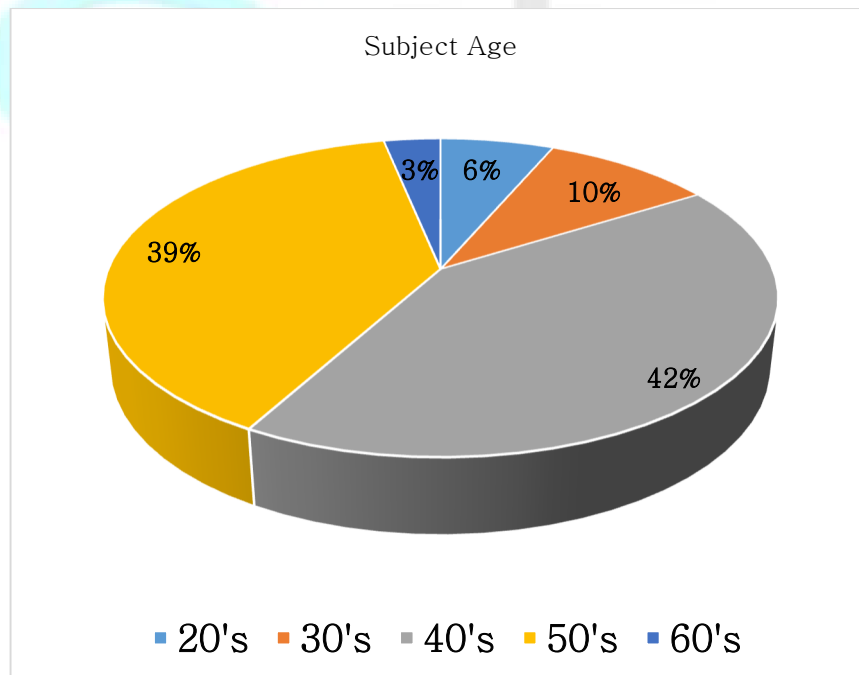
### 1) Subject Information

31 people completed this clinical trial and their gender and ages are as follows (Table 4, Fig. 1).

Table 4. Subject Information

|              |        |       |
|--------------|--------|-------|
| Participants |        | 31    |
| Drop-out     |        | 0     |
| Completed    |        | 31    |
| Gender       | Female | 31    |
|              | Male   | 0     |
| Average age  |        | 46.23 |

Fig. 1. Subject Age



## 2) Result Determination of Skin Patch

### (1) Result determination of skin patch

The test product 'Gaoku hair gloss treatment shampoo' was applied for 24 hours and after removing it, they were visually evaluated, 30 minutes and 24 hours after removal, by a dermatologist and found to be non-irritating(Table 5).

The test product 'Gaoku hair mask' was applied for 24 hours and after removing it, they were visually evaluated, 30 minutes and 24 hours after removal, by a dermatologist and found to be non-irritating(Table 5).

The test product 'Gaoku hair essence' was applied for 24 hours and after removing it, they were visually evaluated, 30 minutes and 24 hours after removal, by a dermatologist and found to be non-irritating(Table 5).

The test product 'Gaoku intensive serum' was applied for 24 hours and after removing it, they were visually evaluated, 30 minutes and 24 hours after removal, by a dermatologist and found to be non-irritating(Table 5).

The test product 'Gaoku intensive mist' was applied for 24 hours and after removing it, they were visually evaluated, 30 minutes and 24 hours after removal, by a dermatologist and found to be non-irritating(Table 5).

Table 5. Result Determination of the Skin Patch

| Test Product<br>Name                  | Skin Response   |            | Skin<br>irritation<br>index | Irritation<br>evaluation |
|---------------------------------------|-----------------|------------|-----------------------------|--------------------------|
|                                       | After<br>30min. | After 24h. |                             |                          |
| Gaoku hair gloss<br>treatment shampoo | 0               | 0          | 0.00                        | No irritation            |
| Gaoku hair mask                       | 0               | 0          | 0.00                        | No irritation            |
| Gaoku hair essence                    | 0               | 0          | 0.00                        | No irritation            |
| Gaoku intensive serum                 | 0               | 0          | 0.00                        | No irritation            |
| Gaoku intensive mist                  | 0               | 0          | 0.00                        | No irritation            |

## 3) Abnormal reaction evaluation

### (1) Evaluation by dermatologist

Physical examination by a dermatologist did not reveal any adverse skin reactions during the study period.

## 7. Results and Conclusion

This clinical trial was conducted on 31 adult men and women aged 20 to 60 years old who were subjected to primary irritation test using 'Gaoku hair gloss treatment shampoo and other 4 Type' skin patch requested by GOKU Corp..

The test product 'Gaoku hair gloss treatment shampoo' was applied for 24 hours, and 30 minutes and 24 hours after removal, they went through visual evaluation by dermatologist and were found to be non-irritating.

The test product 'Gaoku hair mask' was applied for 24 hours, and 30 minutes and 24 hours after removal, they went through visual evaluation by dermatologist and were found to be non-irritating.

The test product 'Gaoku hair essence' was applied for 24 hours, and 30 minutes and 24 hours after removal, they went through visual evaluation by dermatologist and were found to be non-irritating.

The test product 'Gaoku intensive serum' was applied for 24 hours, and 30 minutes and 24 hours after removal, they went through visual evaluation by dermatologist and were found to be non-irritating.

The test product 'Gaoku intensive mist' was applied for 24 hours, and 30 minutes and 24 hours after removal, they went through visual evaluation by dermatologist and were found to be non-irritating.



## 8. References

Guidelines for test methods for demonstrating cosmetic mark advertising, Ministry of Food and Drug Safty. 2014.

Guidelines for cosmetic clinical and efficacy examination, Ministry of Food and Drug Safty. 2012.

Basketter DA, Chamnerlain M, Griffiths HA, Rowson M, Whittle E, York M. The classification of skin irritants by human patch test. *Food Chem Toxicol.* 1997;35(8): 845–52.

CTFA Safety Testing Guideline: The Cosmetic, Toiletry and Fragrance Association, Inc. Washington, D.C. 1981:20005.

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Devos SA, Van Der Valk PG. Epicutaneous patch testing. *Eur J Dermatol.* 2002;12(5): 506–13.

Draize J.H., Woodard G., Calvery H.O. Methods for the study of irritation and toxicity of substances applied topically to the skin and mucous membranes. *J. Pharm. Exp. Ther.* 1994;82:377–390.

Draize J.H. Dermal Toxicity Appraisal of the Safety of Chemicals in Foods, Drugs and Cosmetics, Association of Food and Drug Officials of the United States, Austin, Tex, USA. 1959.

Electrical impedance applied to non-invasive detection of irritation in skin. *Contact dermatitis.* 1992;27:37–42.

Fischer T, Maibach H. Finn chamber patch test technique. *Contact dermatitis.* 1984: 11(3):137–140.

Frosch P. J. & Kligman A.M. The soap chamber; a new method for assessing the irritancy. *J. Invest. Dermtol.* 1979;40:11–14.



## Appendix 1. Subject Information

| Control No. | Initial | Age | Gender |
|-------------|---------|-----|--------|
| 1           | KHH     | 52  | Female |
| 2           | KJY     | 45  | Female |
| 3           | LHM     | 45  | Female |
| 4           | KYH     | 55  | Female |
| 5           | KMJ     | 56  | Female |
| 6           | KKE     | 46  | Female |
| 7           | KEH     | 47  | Female |
| 8           | CIS     | 25  | Female |
| 9           | OYK     | 50  | Female |
| 10          | LMA     | 45  | Female |
| 11          | KYM     | 53  | Female |
| 12          | YIS     | 60  | Female |
| 13          | YIO     | 54  | Female |
| 14          | KSM     | 37  | Female |
| 15          | LHJ     | 40  | Female |
| 16          | HSH     | 48  | Female |
| 17          | CHO     | 50  | Female |
| 18          | KHJ     | 53  | Female |
| 19          | EMJ     | 49  | Female |
| 20          | LMH     | 42  | Female |
| 21          | KYO     | 40  | Female |
| 22          | MYS     | 25  | Female |
| 23          | CSH     | 50  | Female |
| 24          | OSN     | 53  | Female |
| 25          | PSJ     | 32  | Female |
| 26          | JKJ     | 46  | Female |
| 27          | JIS     | 51  | Female |
| 28          | SHS     | 39  | Female |
| 29          | THJ     | 41  | Female |
| 30          | IYH     | 59  | Female |
| 31          | LYJ     | 45  | Female |

## Appendix 2. Test Product Ingredients

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### Gaoku hair gloss treatment shampoo

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Water, Sodium Lauroyl Sarcosinate, Ammonium Lauryl Sulfate, Sodium Laureth Sulfate, Cocamidopropyl Betaine, Polyquaternium-7, Propylene Glycol, Aloe Barbadensis Leaf Water, Red Ginseng Extract, Panax Ginseng Root Extract, Fragrance, Polygonum Multiflorum Root Extract, Swertia Japonica Extract, Yeast Extract, Piroctone Olamine, Chlorphenesin, Polyquaternium-10, Ethylhexylglycerin, Panthenol, Sodium Chloride, Linoleic Acid, Portulaca Oleracea Extract, Niacinamide, Carbomer, Disodium EDTA, Biotin, Simmondsia Chinensis(Jojoba) Seed Extract Hippophae Rhamnoides Extract, Juglans Regia(Walnut) Seed Extract, Persea Gratissima(Avocado) Fruit Extract, Aloe Barbadensis Leaf Extract, Chamomilla Recutita(Matricaria) Flower Extract, Urtica Dioica(Nettle) Extract, Sambucus Nigra Fruit Extract, Chrysanthemum Morifolium Flower Extract, Vitex Trifolia Fruit Extract, Thuj Occidentalis Leaf Extract, Cnidium Officinale Root Extract, Angelica Dahurica Root Extract, Asarum Sieboldi Root Extract, Morus Alba Root Extract, Eclipta Prostrata Extract, Copper Tripeptide-1, CI 16255

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### Gaoku hair mask

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Water, Butylene Glycol, Glycerin, Myristyl Alcohol, Sorbitol, Microcrystalline Wax, Isohexadecane, Cetyl Alcohol, Behentrimonium Chloride, Polyquaternium-7, Glyceryl Stearate, PEG-100 Stearate, Caprylic/Capric Triglyceride, Argania Spinosa Kernel Oil, Glycyrrhiza Glabra(Licorice) Root Extract, Aloe Barbadensis Leaf Water, Polyquaternium-10, Fragrance, Panthenol, Chlorphenesin, Ethylhexylglycerin, Linoleic Acid, Portulaca Oleracea Extract, Niacinamide, Biotin, Simmondsia Chinensis(Jojoba) Seed Extract, Hippophae Rhamnoides Extract, Juglans Regia(Walnut) Seed Extract, Persea Gratissima(Avocado) Fruit Extract, Aloe Barbadensis Leaf Extract, Chamomilla Recutita (Matricaria) Flower Extract, Urtica Dioica(Nettle) Extract, Sambucus Nigra Fruit Extract, Chrysanthemum Morifolium Flower Extract, Vitex Trifolia Fruit Extract, Thuj Occidentalis Leaf Extract, Cnidium Officinale Root Extract, Angelica Dahurica Root Extract, Asarum Sieboldi Root Extract, Morus Alba Root Extract, Eclipta Prostrata Extract, Disodium EDTA

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### Gaoku hair essence

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Cyclopentasiloxane, Isohexadecane, Caprylic/Capric Triglyceride, Dimethicone, Argania Spinosa Kernel Oil, Glycerin, Fragrance, Cetyl PEG/PPG-10/1 Dimethicone, Butylene Glycol Linoleic Acid, Portulaca Oleracea Extract, Sorbitan Sesquioleate

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#### Gaoku intensive serum

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Water, Sodium Hyaluronate, Butylene Glycol, PEG-60 Hydrogenated Castor Oil, Allantoin, Betaine, Natto Gum, Disodium EDTA, Centella Asiatica Extract, Glycyrrhiza Glabra(Licorice) Root Extract, Carbomer, Triethanolamine, Chlorphenesin, Tocopheryl Acetate, Illicium Verum(Anise) Fruit Extract, Citrus Paradisi(Grapefruit) Fruit Extract, Nelumbium Speciosum Flower Extract, Paeonia Suffruticosa Root Extract, Scutellaria Baicalensis Root Extract, Panthenol, Linoleic Acid, Portulaca Oleracea Extract, Althaea rosea flower extract, loe barbadensis leaf extract, Fragrance, Lysine HCL, Proline, Sodium Ascorbyl Phosphate, Acetyl Methionine, Theanine, Vitis Vinifera(Grape) Callus Culture Extract, Nelumbo Nucifera Callus Culture Extract, Panax Ginseng Callus Culture Extract, Camellia Sinensis Callus Culture Extract, RH-Oligopeptide-1, Hydrolyzed Pea Protein, Lecithin, Olea Europaea(Olive) Fruit Oil, Phytosterols, Squalane, Butyrospermum Parkii(Shea Butter), Ceramide NP, Propanediol

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#### Gaoku intensive mist

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Water, Glycerin, Butylene Glycol, Glycyrrhiza Glabra(Licorice) Root Extract, Allantoin, Betaine, Polysorbate 20, Chrysanthellum Indicum Extract, Camellia Sinensis Leaf Extract, Polyglutamic Acid, Beta-Glucan, PEG-12 Glyceryl Laurate, PEG-36 Castor Oil, Farnesyl Acetate, Farnesol, Panthenyl Triacetate, Althaea rosea flower extract, loe barbadensis leaf extract, Sodium Hyaluronate, Chlorphenesin, Illicium Verum(Anise) Fruit Extract, Citrus Paradisi(Grapefruit) Fruit Extract, Nelumbium Speciosum Flower Extract, Paeonia Suffruticosa Root Extract, Scutellaria Baicalensis Root Extract, Sodium Citrate, Linoleic Acid Portulaca Oleracea Extract, Disodium EDTA, Lysine HCL, Vitis Vinifera(Grape) Callus Culture Extract, Nelumbo Nucifera Callus Culture Extract, Panax Ginseng Callus Culture Extract, Camellia Sinensis Callus Culture Extract

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### Appendix 3. Results of Determination

#### 1) Skin patch test results determination

| Gaoku hair gloss treatment shampoo |                               |                                |
|------------------------------------|-------------------------------|--------------------------------|
| Control No.                        | After 30 min of patch removal | After 24 hour of patch removal |
| 1                                  | 0                             | 0                              |
| 2                                  | 0                             | 0                              |
| 3                                  | 0                             | 0                              |
| 4                                  | 0                             | 0                              |
| 5                                  | 0                             | 0                              |
| 6                                  | 0                             | 0                              |
| 7                                  | 0                             | 0                              |
| 8                                  | 0                             | 0                              |
| 9                                  | 0                             | 0                              |
| 10                                 | 0                             | 0                              |
| 11                                 | 0                             | 0                              |
| 12                                 | 0                             | 0                              |
| 13                                 | 0                             | 0                              |
| 14                                 | 0                             | 0                              |
| 15                                 | 0                             | 0                              |
| 16                                 | 0                             | 0                              |
| 17                                 | 0                             | 0                              |
| 18                                 | 0                             | 0                              |
| 19                                 | 0                             | 0                              |
| 20                                 | 0                             | 0                              |
| 21                                 | 0                             | 0                              |
| 22                                 | 0                             | 0                              |
| 23                                 | 0                             | 0                              |
| 24                                 | 0                             | 0                              |
| 25                                 | 0                             | 0                              |
| 26                                 | 0                             | 0                              |
| 27                                 | 0                             | 0                              |
| 28                                 | 0                             | 0                              |
| 29                                 | 0                             | 0                              |
| 30                                 | 0                             | 0                              |
| 31                                 | 0                             | 0                              |

| Gaoku hair mask |                               |                                |
|-----------------|-------------------------------|--------------------------------|
| Control No.     | After 30 min of patch removal | After 24 hour of patch removal |
| 1               | 0                             | 0                              |
| 2               | 0                             | 0                              |
| 3               | 0                             | 0                              |
| 4               | 0                             | 0                              |
| 5               | 0                             | 0                              |
| 6               | 0                             | 0                              |
| 7               | 0                             | 0                              |
| 8               | 0                             | 0                              |
| 9               | 0                             | 0                              |
| 10              | 0                             | 0                              |
| 11              | 0                             | 0                              |
| 12              | 0                             | 0                              |
| 13              | 0                             | 0                              |
| 14              | 0                             | 0                              |
| 15              | 0                             | 0                              |
| 16              | 0                             | 0                              |
| 17              | 0                             | 0                              |
| 18              | 0                             | 0                              |
| 19              | 0                             | 0                              |
| 20              | 0                             | 0                              |
| 21              | 0                             | 0                              |
| 22              | 0                             | 0                              |
| 23              | 0                             | 0                              |
| 24              | 0                             | 0                              |
| 25              | 0                             | 0                              |
| 26              | 0                             | 0                              |
| 27              | 0                             | 0                              |
| 28              | 0                             | 0                              |
| 29              | 0                             | 0                              |
| 30              | 0                             | 0                              |
| 31              | 0                             | 0                              |

| Gaoku hair essence |                               |                                |
|--------------------|-------------------------------|--------------------------------|
| Control No.        | After 30 min of patch removal | After 24 hour of patch removal |
| 1                  | 0                             | 0                              |
| 2                  | 0                             | 0                              |
| 3                  | 0                             | 0                              |
| 4                  | 0                             | 0                              |
| 5                  | 0                             | 0                              |
| 6                  | 0                             | 0                              |
| 7                  | 0                             | 0                              |
| 8                  | 0                             | 0                              |
| 9                  | 0                             | 0                              |
| 10                 | 0                             | 0                              |
| 11                 | 0                             | 0                              |
| 12                 | 0                             | 0                              |
| 13                 | 0                             | 0                              |
| 14                 | 0                             | 0                              |
| 15                 | 0                             | 0                              |
| 16                 | 0                             | 0                              |
| 17                 | 0                             | 0                              |
| 18                 | 0                             | 0                              |
| 19                 | 0                             | 0                              |
| 20                 | 0                             | 0                              |
| 21                 | 0                             | 0                              |
| 22                 | 0                             | 0                              |
| 23                 | 0                             | 0                              |
| 24                 | 0                             | 0                              |
| 25                 | 0                             | 0                              |
| 26                 | 0                             | 0                              |
| 27                 | 0                             | 0                              |
| 28                 | 0                             | 0                              |
| 29                 | 0                             | 0                              |
| 30                 | 0                             | 0                              |
| 31                 | 0                             | 0                              |

| Gaoku intensive serum |                               |                                |
|-----------------------|-------------------------------|--------------------------------|
| Control No.           | After 30 min of patch removal | After 24 hour of patch removal |
| 1                     | 0                             | 0                              |
| 2                     | 0                             | 0                              |
| 3                     | 0                             | 0                              |
| 4                     | 0                             | 0                              |
| 5                     | 0                             | 0                              |
| 6                     | 0                             | 0                              |
| 7                     | 0                             | 0                              |
| 8                     | 0                             | 0                              |
| 9                     | 0                             | 0                              |
| 10                    | 0                             | 0                              |
| 11                    | 0                             | 0                              |
| 12                    | 0                             | 0                              |
| 13                    | 0                             | 0                              |
| 14                    | 0                             | 0                              |
| 15                    | 0                             | 0                              |
| 16                    | 0                             | 0                              |
| 17                    | 0                             | 0                              |
| 18                    | 0                             | 0                              |
| 19                    | 0                             | 0                              |
| 20                    | 0                             | 0                              |
| 21                    | 0                             | 0                              |
| 22                    | 0                             | 0                              |
| 23                    | 0                             | 0                              |
| 24                    | 0                             | 0                              |
| 25                    | 0                             | 0                              |
| 26                    | 0                             | 0                              |
| 27                    | 0                             | 0                              |
| 28                    | 0                             | 0                              |
| 29                    | 0                             | 0                              |
| 30                    | 0                             | 0                              |
| 31                    | 0                             | 0                              |

| Gaoku intensive mist |                               |                                |
|----------------------|-------------------------------|--------------------------------|
| Control No.          | After 30 min of patch removal | After 24 hour of patch removal |
| 1                    | 0                             | 0                              |
| 2                    | 0                             | 0                              |
| 3                    | 0                             | 0                              |
| 4                    | 0                             | 0                              |
| 5                    | 0                             | 0                              |
| 6                    | 0                             | 0                              |
| 7                    | 0                             | 0                              |
| 8                    | 0                             | 0                              |
| 9                    | 0                             | 0                              |
| 10                   | 0                             | 0                              |
| 11                   | 0                             | 0                              |
| 12                   | 0                             | 0                              |
| 13                   | 0                             | 0                              |
| 14                   | 0                             | 0                              |
| 15                   | 0                             | 0                              |
| 16                   | 0                             | 0                              |
| 17                   | 0                             | 0                              |
| 18                   | 0                             | 0                              |
| 19                   | 0                             | 0                              |
| 20                   | 0                             | 0                              |
| 21                   | 0                             | 0                              |
| 22                   | 0                             | 0                              |
| 23                   | 0                             | 0                              |
| 24                   | 0                             | 0                              |
| 25                   | 0                             | 0                              |
| 26                   | 0                             | 0                              |
| 27                   | 0                             | 0                              |
| 28                   | 0                             | 0                              |
| 29                   | 0                             | 0                              |
| 30                   | 0                             | 0                              |
| 31                   | 0                             | 0                              |



## Main Equipment of the Testing Institute

1. Skin Visiometer SV700 USB
2. Vacuum pump VP45 4 1 Calibration slide
3. Visioscan(VC98)
4. Skin glossmeter
5. Moisturemeter D
6. VISIA CR-2.3
7. Primos-lite
8. F-ray (research) 2230megapixel general picture / F-ray / UV
9. Antera 3D CS
10. Epsilon (Model: E100)
11. FLIR 530
12. Chromameter(CR400)
13. Cannon EOS 5D MARK4
14. JANUS-III
15. High Performance Skin Ultrasound System(DermaScan C USB)
16. DermaLab Combo Series Specification
  - Moisture / Hydration Probe
  - Sebum sensor
  - TEWL Probe
  - Elasticity Probe
  - Color meter Probe
  - Skin PH Meter
  - Skin Thermometer
17. FOLLISCOPE 5.0
18. KONG (MULTI-FUNCTIONAL SCOPE)
19. Cellulite Inspection System
20. Termohydrostat
21. Operation PC (24V360-LA35K)
22. Korea plus Statistics for Data Analysis Embedded on SPSS Statistics Premium
23. Image Analysis Application for windows – Image-Pro 10

24. VECTRA M3
25. Global Hair Device
26. Dino-Lite
27. C+ K electronic dual MPA580  
Corneometer  
Cutometer(2/8mm)  
Sebumeter  
Mexameter
28. Clean bench
29. Constant temperature incubator
30. FACS (Fluorescence activated cell sorter)
31. JULI stage
32. Chemidoc
33. Western blot
34. A bacteria incubator
35. Centrifuge
36. ELISA reader
37. LC-MS/MS
38. HPLC
39. ICP-MS
40. ICP-OES
41. AAS
42. Automatic mercury analyzer
43. IC
44. UV-VIS
45. GC-FID
46. GC-MS
47. Head space

# Researcher CV

## 1. Research Investigator

### 1) Personal Details

Name: Won Kyu Hong

### 2) Education

2004: Inha University, Medical school, Bachelor

2004~2005: Inha University Hospital intern

2005~2009: Inha University Hospital resident

2007: Inha University, Medical school, Master

### 3) Career

2004: Acquired medical license (license no.: 83931)

2009: Acquired license for dermatology (license no.: 1771)

2009~2012: Korean Hansen Welfare Association, Chunbuk branch, Head of Annex center

2013~2015: Pyungtaek Human Dermatology, Chief Director

2013~: Inha University, Adjunct professor of Skin Science Class

2016~: Chungra Human Dermatology, Chief Director

2018~: Human Cosmetic, Research Director

2018~: International St. Mary's Hospital, Adjunct Professor

2018~: OATC Skin Clinical Trial Center, Research Director

### 4) Academic Activities

Member of the Korean Dermatological Association

Member of the Korean Society for Acne Research

Member of the Korean Hair Research Society

Member of the Korean Association of Dermatologists

2018~: Information committee member of Korean Association of Dermatologists

2018~: Planning & policy committee member of Korean Association of Dermatologists

## 2. Quality Assurance Officer

### 1) Personal Details

Name: Eun Ji Lim

### 2) Education

2008~2011: Youngnam University, Bachelor in Food and Nutrition

2011~2013: Youngnam University, Master in Food and Nutrition

### 3) Career

2018~: OATC Skin Clinical Trial Center, Assistant Manager

### 3. Researcher

#### 1) Personal Details

Name: Hui Jeong Jeong

#### 2) Education

2002~2004: Konkuk University, Department of Environmental Engineering, bachelor of engineering (science)

#### 3) Career

2018~: OATC Skin Clinical Trial Center, Head Manager

#### 1) Personal Details

Name: Jong Seon Lee

#### 2) Education

2009~2013: Mokpo University, Bachelor in Oriental Medicine Resources

#### 3) Career

2018~: OATC Skin Clinical Trial Center, Assistant Manager

#### 1) Personal Details

Name: Ji Sun Han

#### 2) Education

2006~2010: Sungkyul University, Bachelor in Beauty Design

2010~2012: Sungkyul University, Master in Beauty Education

#### 3) Career

2018~: OATC Skin Clinical Trial Center, Assistant Manager

#### 1) Personal Details

Name: Bo Ram Kim

#### 2) Education

2010~2013: Suwon Science College, Bachelor in Tourism Chinese

#### 3) Career

2018~: OATC Skin Clinical Trial Center, Associate

#### 1) Personal Details

Name: Su Yeon Kim

#### 2) Education

2012~2016: Sooncheonhyang University, Chemistry and Cosmetology Major, Bachelor of Sciences

#### 3) Career

2019~: OATC Skin Clinical Trial Center, Associate

1) Personal Details

Name: Ju Seon Lee

2) Education

2010~2014: Chungju National University, Department of Biotechnology, bachelor of engineering (science)

2014~2016: Incheon National University, Department of Cosmetic Science & Management, Master of Science

3) Career

2018~: OATC Skin Clinical Trial Center, Employee

1) Personal Details

Name: Hae Na Lee

2) Education

2011~2016: Sooncheonhyang University, Bachelor in Bio Medical Laboratory Science, Cosmetical Science

3) Career

2018~: OATC Skin Clinical Trial Center, Employee

1) Personal Details

Name: Hong Bi Kim

2) Education

2013~2016: Silla University, Bachelor in Pharmaceutical Engineering

2015~2018: Silla University, Master in Pharmaceutical Engineering

3) Career

2018~: OATC Skin Clinical Trial Center, Employee

# Research Performance

## 1. Research Investigator

| No. | Thesis   |
|-----|--|
| 1   | Bo Hee Yang, Won Kyu Hong, Sung Hyub Han, Ji Won Byun, Hee Jin Song, Seung Gyun In, Gwang Seong Choi, Jeong Hyun Shin. Cutaneous Granulomas Associated with Common Variable Immunodeficiency. Korean journal of dermatology. 2011;49(7):601-605  |
| 2   | Hee Jin Song, Sung Hyup Han, Ji Won Byun, Won Kyu Hong, Hyeon Sook Lee, Jeong Hyun Shin, Gwang Seong Choi. Three Cases of Digital Mucous Cyst Treated with Sodium Tetradecyl Sulfate Sclerotherapy. Korean journal of dermatology. 2008;46(9):1249-1252                                  |
| 3   | Sung Hyub Han, Hee Jin Song, Won Kyu Hong, Hyun Sook Lee, Jeong Hyun Shin, Kwang Seong Choi. A Case of Sister Mary Joseph's Nodule. Korean journal of dermatology. 2008;46(8):1103-1107  |
| 4   | Hee Jin Song, Won Kyu Hong, Hyeon Sook Lee, Jeong Hyun Shin, Sun Young Moon, Gwang Seong Choi. A Case of Scrub Typhus during Pregnancy Treated with Azithromycin. Korean journal of dermatology. 2008;46(6):859-861  |
| 5   | Won Kyu Hong, Jeong Hyun Shin, Gwang Seong Choi. Therapeutic Effect of Topical Anthralin for Treatment-Resistant Extensive Alopecia Areata. Korean journal of dermatology. 2008;46(5):641-647  |
| 6   | Hee Jin Song, Sung Hyub Han, Won Kyu Hong, Hyun Suk Lee, Gwang Seong Choi, Jeong Hyun Shin. A Case of Rheumatoid Neutrophilic Dermatitis. Korean journal of dermatology. 2008;46(4):514-516  |
| 7   | Won Kyu Hong, Jeong Hyun Shin, Yeon Hee Lee, Dong Ki Park, Gwang Seong Choi. The Clinical Effect of Phellinus Linteus Grown on Germinated Brown Rice in the Treatment of Atopic Dermatitis. The Korea Journal of Herbology. 2008;23(1):103-108   |
| 8   | Hee Jin Song, Won Kyu Hong, Hyun Sook Lee, Gwang Seong Choi, Jeong Hyun Shin. Macular Amyloidosis Presented as Depressed Patches on the Face. Korean journal of dermatology. 2008;46(2):285-288  |
| 9   | Hyeon Sook Lee, Sung Hyub Han, Hee Jin Song, Won Kyu Hong, Jeonghyun Shin, Gwang Seong Choi. A Case of Lichenoid Drug Eruption Caused by Allopurinol. Korean journal of dermatology. 2008;46(1):130-133  |
| 10  | Won Kyu Hong, Hee Jin Song, Hyeon Sook Lee, Jong Rock Lee, Jeong Hyun Shin, Gwang Seong Choi. A Case of Cowden's Syndrome. Korean journal of dermatology. 2007;45(8):829-831   |
| 11  | Hye Young Lee, Won Kyu Hong, Jeong Hyun Shin, Ju Young Roh, Jong Rok Lee. A Case of Umbilical Omphalomesenteric Duct Polyp. Korean journal of dermatology. 2006;44(11):1342-1344   |
| 12  | Lee HS, Hong WK, Lee JR, Shin JH, Choi KS, Kim YC. A Case of Acrosyringial Nevus. Korean journal of dermatology. 2006;44(6):751-753  |
| 13  | Won Kyu Hong, Hyeon Sook Lee, Jong Rok Lee, Jeong Hyun Shin, Gwang Sung Choi, You Chan Kim. Two Cases of Pilomatricoma with Bullous Appearance. Korean journal of dermatology. 2006;44(3):330-333  |
| 14  | Lee HS, Hong WK, In SG, Lee JR, Shin JH, Choi GS. A Case of Dermatomyositis Associated with Scarring Alopecic Patches. Korean journal of dermatology. 2006;44(2):250-252   |
| 15  | Won Kyu Hong, Jeong Hyun Shin, Gwang Seong Choi. Therapeutic Effect of Topical Anthralin for Treatment-Resistant Extensive Alopecia Areata. Korean journal of dermatology. 2009;42(9):1130-1137  |
| 16  | Song Hee Jin, Hong Won Kyu, Han Sung Hyub, Byun Ji Won, Lee, Hyeon Sook, Choi Gwang Seong, Shin, Jeong Hyun. Acral Angioosteoma Cutis. American Journal of Dermatopathology. 2010;32(5):477-478  |
| 17  | Hee Jin Song, Sung Hyup Han, Won Kyu Hong, Hyeon Sook Lee, Jeong Hyun Sjing, Gwang Seong Choi. Paraneoplastic bullous pemphigoid: Clinical disease activity correlated with enzyme-linked immunosorbent assay index for the NC16A domain of BP180. Journal of Dermatology. 2009;36:66-68 |
| 18  | JW Byun, SH Han, HJ Song, WK Hong, HS Lee, JH Shin, GS Choi. A case of supraumbilical skin rash after chemoembolization for hepatocellular carcinoma. Journal of the European Academy of Dermatology and Venereology. 2009;23(12):1458-1459  |
| 19  | WK Hong, HJ Song, HS Lee, JH Shin, GS Choi. Hobnail haemangioma associated with a secondary sexual characteristic. Journal of the European Academy of Dermatology and Venereology. 2009;23:465-466   |

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| 20 | HJ Song, WK Hong, HS Lee, GS Choi, JH Shin. Herpes zoster complicated by delayed intracranial haemorrhage. <i>Clinical and Experimental Dermatology</i> . 2009;34:518-540                              |
| 21 | Sung Hyub Han, Hee Jin Song, Won Kyu Hong, Hyeon Sook Lee, Gwang Seong Choi, Jeong Hyun Shin. Rhabdomyomatous mesenchymal hamartoma of the vagina. <i>Pediatric Dermatology</i> . 2009;26(6):753-755   |
| 22 | SH Han, HJ Song, WK Hong, HS Lee, GS Choi, JH Shin. A case of adult blaschkitis with features of interface dermatitis. <i>British Journal of Dermatology</i> . 2008;159:231-266                        |
| 23 | HJ Song, WK Hong, HS Lee, JH Shin, GS Choi. Intramuscular lipoma of the sternocleidomastoid muscle. <i>J Eur Acad Dermatol Venereol</i> . 2008;22:363-404  |
| 24 | HS Lee, HJ Song, WK Hong, JH Shin, GS Choi. Pseudoxanthoma elasticum-like papillary dermal elastolysis with solar elastosis. <i>J Eur Acad Dermatol Venereol</i> . 2008;22:363-404                     |
| 25 | Shin Goo Park, Eui Cheol Lee, Woo Kyu Hong, Hee Jin Song, Jeong Hyun Shin. A Case of Occupational Allergic Contact Dermatitis due to PVC Hose. <i>Journal of Occupational Health</i> . 2008;50:197-200 |
| 26 | Shin Jeonghyun, Hong Wonkyu, Song Heejin, Choi Gwangseong, Kim You Chan. Atypical Acute Graft-Versus-Host Disease. <i>American journal of dermatopathology</i> . 2007;29:576-577                       |
| 27 | Byun JW, Hong WK, Han SH, Song HJ, Lee HS, Choi GS, Shin JH. Red scrotum syndrome: successful treatment with oral doxycycline. <i>International Journal of Dermatology</i> . 2012;51(3):362-363        |

