TEST REPORT

Report No.:	JY-2408-269-HE-02
Name of Sample:	HAPLEX®Plus Sodium hyaluronate solid beverage
Test Type:	Commissioned testing
Client:	Bloomage Biotechnology Corporation Limited
Address:	No. 678, Tianchen Road, High-tech Industrial Development Zone, Jinan, Shandong, China

Declaration

1、The inspection report shall be null and void when there is no Special Seal for Inspection Report of this Inspection Institution or no Common Seal of this Inspection Institution.

2、The inspection report shall be null and void when there is no signatures of respective persons charged for testing, proofread, checking and (or) approval.

3、Any alteration on the inspection report shall be null and void.

4、The photocopies of the inspection report shall only be valid and effective when there is an original Special Seal for Inspection Report of this Inspection Institution or an original Common Seal of this Inspection Institution.

5、The result of the inspection report is issued only based on the sample of trusted products and the reference method, the data and the results must be used correctly, it may not be improper used such as for any exaggerated or false advertising of the products.

6、This report does not bear the CMA (China Metrology Accreditation) mark, and all or part of the testing items have not been accredited. It is intended solely for purposes such as scientific research, teaching, internal quality control within enterprises, and efficacy studies of enterprise products.

7、This report and the name of the inspection institution shall not be used for advertisement, without the written approval of the testing laboratory.

8、For the sample(s) submitted by the applicant, the sample information in the test report is provided by the applicant and the laboratory is not responsible for its authenticity.

9、Without the written approval of the company, the test report shall not be partially copied (except full text copy).

CENTRE DATA

Name of the Inspection Institution：Shanghai JiaYou High-Tech Co., Ltd

Add：Room 702, Building 16，N0.1000，Jinhai Road,，Shanghai，P.R. China

Test Report

Client	Bloomage Biotechnology Corporation Limited	
Basic Information	Report number	JY-2408-269-HE-02
	Sample name	HAPLEX®Plus Sodium hyaluronate solid beverage
	Type of detection	Commissioned testing
	Date of commission	August 15, 2024
	To sample date	November 04, 2024
	Date of detection	From November 25, 2024 to February 20, 2025
Purpose of testing	The objective of this project was to evaluate whether continuous use of the test samples by the target population for 56 days provided moisturizing, repairing, and firming effects, and to investigate the products' effects on skin glossiness, skin tone, and pore parameters.	
Detection conclusion (facial)	This randomized, controlled clinical study enrolled 67 healthy Chinese female participants aged 30 to 60 years. The participants exhibited self-reported skin laxity, xerosis, and crow's feet (wrinkle severity ≥ grade 2 as professionally assessed), and had facial dyschromia (dullness, epidermal hyperpigmentation, solar lentigines), T-zone seborrhea, and at least one distinct pigmented lesion in the test area with an ITA° difference >10° compared to adjacent skin and a diameter ≥3mm (excluding freckles, pigmented nevi, or other topically recalcitrant conditions). The study comprised two groups: the sample group (n=33) used a solid beverage containing 100 mg HA; and the control (n=34) used a placebo solid beverage. Following 56 days of continuous product use, the results demonstrated significant efficacy in the following aspects: - **The instrument measurement results showed that:** After 14 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant increase in the stratum corneum moisture content (P<0.050). After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant increase in the stratum	

corneum moisture content (P<0.050). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage exhibited a significant increase in the stratum corneum moisture content (P<0.010). Therefore, under the conditions of this study, the test product was considered to have moisturizing efficacy.

After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant increase in the skin glossiness (P<0.001). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant increase in the skin glossiness (P<0.050).

After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the transepidermal water loss rate (facial) (P<0.050). Therefore, under the conditions of this study, the test product was considered to have repairing efficacy.

After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the skin yellowness (b* value) (P<0.050).

After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant increase in the skin color individual typology angle (ITA°) (P<0.050). Therefore, under the conditions of this study, the test product was considered to have whitening efficacy.

After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the pore area percentage (P<0.001). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant decrease in the pore area percentage (P<0.001).

- **The questionnaire results demonstrated the following findings:**

Following 14, 28, 42, and 56 days of product use, participants expressed high satisfaction with the sample's overall quality, fragrance, and palatability, indicating a strong preference for the product, willingness to continue usage and repurchase, and intention to recommend it to others. Post-consumption, users reported

	noticeable improvements in skin hydration, softness, elasticity, firmness, and plumpness. They also perceived reductions in facial dryness lines, crow's feet, and under-eye fine lines, overall wrinkle lightening, and diminished depth of periorbital wrinkles. Additionally, participants reported generally positive subjective experiences. Critically, 100% of subjects reported no adverse effects throughout the study period, with comprehensive outcomes detailed in the self-assessment documentation. - **Conclusions:** The instrument measurement results indicated that the sample group (100 mg HA solid beverage) demonstrated moisturizing, repairing, firming, and whitening efficacy, along with significant improvements in skin tone brightening and pore refinement. The self-assessment questionnaire results indicated that the sample group (100 mg HA solid beverage) demonstrated firming efficacy. No adverse effects on skin health were found.
Detection conclusion (scalp)	- **The instrument measurement results showed that:** After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the transepidermal water loss rate (scalp) ($P<0.001$). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant decrease in the transepidermal water loss rate (scalp) ($P<0.001$). Therefore, under the conditions of this study, the test product was considered to have repairing efficacy. - **Conclusions:** The instrument measurement results indicated that, under the conditions of this study, the sample group (100 mg HA solid beverage) demonstrated repairing efficacy. No adverse effects on skin health were found.

Investigator：_____Checked by：_____Approved by：_____

Shanghai JiaYou High-Tech Co., Ltd

（Stamped Area）

Ltd Date：

Contents

I、Reference

1. T/CAB 0152-2022. Cosmetic Efficacy Test Methods for Anti-wrinkle, Firming, Moisturizing, Oil Control, Repair, Nourishment, and Soothing [S]. Beijing: China Industry-University-Research Institute Collaboration Association, 2022.
2. National Medical Products Use. Technical Standards for Cosmetic Safety: Skin Whitening Efficacy Test Methods - Method 2: Open Application Test in Human Subjects [S]. 2021.
3. Technical Standards for Cosmetic Safety (2015 Edition) [S]. Beijing: China Food and Drug Use, 2015.
4. National Medical Products Use. Technical Guidelines for Efficacy Claim Evaluation of Cosmetics [S]. 2021.
5. Liu W, Y, Zhou L, Zhao H. Cosmetic Efficacy Evaluation (XIII) - Consumer Use Test. Daily Chemical Industry, 2021, 51(06): 485-490.
6. Zhao, M. C., Liu, W., Lu, X. H., et al. Application of Dendrobium officinale Extract in Cosmetics. Flavors and Fragrances and Cosmetics, 2022, (04): 94-99.
7. Cai Y, W. Development of Anti-aging Eye Cream and Mask with Lycopene-enriched Yeast Extract [D]. South China University of Technology, 2018.
8. Zhou Y, Ma P, Cai X, F, et al. Efficacy of Serum Containing Lens Culinaris and Bixa Orellana Seed Extracts on Sebum Control and Pore Refinement [J]. Flavour Fragrance Cosmetics, 2022(1): 64-67.

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II、Materials and Methods

2.1 Sample related information

2.1.1 Sample information

All test samples are provided by the client.

Table1 Sample information sheet

Serial number	Groups	Sample name	Sample traits	Batch number	Shelf life	Storage conditions
1	Sample group	100 mg HA solid beverage	Homogeneous powdered	202408001	2026.8.7	Room temperature
2	Control	Solid beverage	Homogeneous powdered	/	2026.8.7	Room temperature

* The supplier shall be responsible for any safety problems caused by the test materials.

2.1.2 Sample use method

Sample group: the product was administered orally at a dosage of one sachet per day for 56 consecutive days until trial completion.

Control: the product was administered orally at a dosage of one sachet per day for 56 consecutive days until trial completion.

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2.2 Subjects

1. Have signed an informed consent form and voluntarily participate in this test.
2. Eligibility Criteria
    1) The subjects were Chinese women, aged between 30 and 60 years (calculated on the test day).
    2) The participants exhibited self-reported skin laxity, xerosis, and crow's feet (wrinkle severity ≥ grade 2 as professionally assessed), and had facial dyschromia (dullness, epidermal hyperpigmentation, solar lentigines), T-zone seborrhea, and at least one distinct pigmented lesion in the test area with an ITA° difference >10° compared to adjacent skin and a diameter ≥ 3mm (excluding freckles, pigmented nevi, or other topically recalcitrant conditions).
    3) The subjects had no history of allergy to cosmetics or drugs.
    4) Subjects promised not to change their existing skin care product usage habits during the test period.
    5) Subjects promised not to use any facial skin care products with the same function other than the test sample during the test period.
    6) The subject would not participate in long-term outdoor sports or plan to go to the seaside area with strong sunshine during the test period.
    7) Subjects had a certain awareness of makeup.
    8) The subjects had not undergone laser or chemical exfoliation.
3. Exclusion Criteria
    1) The subjects had a history of skin diseases or diseases such as physical hypersensitivity and allergic dermatitis, and were considered unfit to participate in the project by clinical evaluation.
    2) The subjects had large areas of birthmarks, scratches, leukoplakia, pigmented nevus, keloids and other skin manifestations that may affect the test results.
    3) The subject has received previous skin treatments, cosmetology, or other tests that may affect the results.
    4) The subject has active, allergic, serious systemic disease, immunodeficiency, or

autoimmune disease.

5) The subjects had used hormone drugs or immunosuppressants in the past month.

6) The participant was pregnant, breastfeeding, or has been deemed unfit for the test.

7) The subject's test site had participated in other clinical trials within the past three months.

4. Discontinuation criteria:

1) The subject asked to stop the trial.

2) Unable to continue the trial due to adverse reactions or special physiological and pathological changes.

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2.3 Methods

2.3.1 Experimental design

This study employed a randomized, controlled trial design comprising two distinct groups:

Sample group: 100 mg HA solid beverage;

Control: solid beverage.

2.3.2 Testing procedure

Table2 Testing flow sheet

Test time point	Baseline	14 days	28 days	42 days	56 days
Register respondent information	●	●	●	-	●
Preliminary screening	●	-	-	-	-
Sign an informed consent form	●	-	-	-	-
Clean the skin of the test area	●	●	●	-	●
Wait for balance (constant temperature and humidity)	●	●	●	-	●
Pigmentation localization	●	-	-	-	-
Visia-CR imaging	●	●	●	-	●
Stratum corneum moisture content measurement	●	●	●	-	●
Transepidermal water loss rate test	●	●	●	-	●
Skin colorimeter CL400 testing	●	●	●	-	●
Skin glossiness measurement:	●	●	●	-	●
Using a test sample	-	●	●	●	●
Participants filled out survey instruments	-	●	●	●	●
Distribute the test samples	●	-	-	-	-
Discomfort symptoms follow up ask	-	●	●	●	●
Please conclude this order and hand it over to the front desk	●	●	●	-	●

Note: "●" in the above table indicates implementation, "-" indicates no implementation

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2.3.3 Test environment

Ambient temperature (21.0 °C ±1.0 °C), ambient humidity (50%±10%RH).

2.3.4 Equipment information

Table3 Device information sheet

Serial number	Name	Model number	Manufacturer
1	Cuticles moisture content tester	Corneometer CM825	Courage&Khazaka, Germany
2	Transcutaneous water loss tester	Tewameter TM Hex	Courage&Khazaka, Germany
3	Skin gloss measurement probe	Skin-Glossymeter GL 200	Courage&Khazaka, Germany
4	Skin colorimeter probe	Skin colorimeter CL400	Courage&Khazaka, Germany
5	Skin image analysis system	VISIA-CR	Canfield Scientific，USA
6	Image processing enhancement analysis system	Image-Pro® Plus Chinese Version 7.0.1	Media Cybernetics，USA

2.3.5 Test parts

Table4 Test site information sheet

Serial number	Name	Index of detection	Positioning description
1	Cuticles moisture content tester	Stratum corneum moisture content	The highest part of the cheek bones
2	Transcutaneous water loss tester	Transepidermal water loss rate	The point where the line of the eye meets the tip of the nose
3	Skin colorimeter probe	Skin yellowness (b* value) change rate	At the pigmented spot site
4		Skin color individual typology angle (ITA°)	At the pigmented spot site
5	Skin gloss measurement probe	Skin glossiness	The point where the line of the eye meets the tip of the nose
6	Image processing enhancement analysis system	Pore area percentage	The intersection of the eye line and the tip of the nose

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2.3.6 Investigated efficacy and detection indicators

（1） Investigate the moisturizing efficacy of the product

Detection indicator:

Stratum corneum moisture content, unit: Corneometer Unit (C.U.). A higher value indicates a higher water content in the stratum corneum of the skin.

Detection method:

Indirect measurement method was used to measure the skin moisture content of the stratum corneum using a Corneometer CM825. The data were collected three times and the average value was taken.

The results determined that:

If the change in the stratum corneum moisture content was statistically significant ($P<0.05$) at any test time point before or after use, and the measured value was higher than that before using the sample; or if the difference at any time point in the sample group was significantly higher than that in the control ($P<0.05$), the experimental sample was considered to have moisturizing efficacy on the skin.

（2） Evaluation of product effects on skin glossiness

Detection indicator:

Skin glossiness, unit: a.u. A higher value indicates better skin glossiness.

Detection method:

Indirect measurement method was used to measure skin glossiness using a Skin-Glossymeter GL 200 (Courage & Khazaka, Germany). The data were collected three times and the average value was taken.

The results determined that:

If the change in the skin glossiness was statistically significant ($P<0.05$) at any test time point before or after use, and the measured value was higher than that before using the sample; or if the difference at any time point in the sample group was significantly higher than that in the control ($P<0.05$), the experimental sample was considered to have an effect on skin glossiness.

（3） Investigate the repairing efficacy of the product

Detection indicator:

Transepidermal water loss rate, unit: g/m^2/h. A lower value indicates less transepidermal water loss rate.

Detection method:

Indirect measurement method was employed, utilizing a transepidermal water loss rate meter (Tewameter TM Hex) to determine the transepidermal water loss rate of the skin. Data were collected three times, and the average value was calculated.

The results determined that:

If the change in the transepidermal water loss rate was statistically significant (P<0.050) at any test time point before or after use, and the measured value was lower than that before using the sample. or if the difference at any time point in the sample group was significantly lower than that in the control (P<0.050), the experimental sample was considered to have repairing efficacy on the skin.

（4） Investigate the brightening and spot-reducing efficacy of the product

Detection indicator:

Skin yellowness (b* value), unit: a.u. A higher value indicates yellower skin.

Skin color individual typology angle (ITA°), unit: a.u. A higher value indicates more "bright" complexion.

Detection methods:

Indirect measurement approach was employed using the Skin-Colorimeter CL 400 (Courage & Khazaka, Germany) to determine skin color parameters (b*/ITA°). Triplicate measurements were obtained and averaged for analysis.

The results determined that:

If the change in skin color parameters (b*/ITA°) at any testing time point before and after application was statistically significant (P<0.050) and the measured value was lower than that before application, or if the difference in the test group at any time point was significantly higher than that of the control (P<0.050), the test sample was considered to have brightening and spot-reducing efficacy.

（5） Investigate the pore-refining efficacy of the product

Detection indicator:

Pore area percentage, unit: %. A lower value indicates smaller pore coverage.

Detection methods:

Indirect measurement approach was employed using the skin image analysis system VISIA-CR (Canfield Scientific, USA) to capture facial images. These images were subsequently analyzed using the image processing enhancement analysis system (Image-Pro® Plus Chinese Version 7.0.1) to obtain the pore area percentage.

The results determined that:

If the change in the pore area percentage at any testing time point before and after application was statistically significant ($P<0.050$) and the measured value was lower than that before application, or if the difference in the test group at any time point was significantly lower than that of the control ($P<0.050$), the test sample was considered to have pore-refining efficacy.

（6） Consumer perception evaluation

Evaluation Method:

A questionnaire-based survey was conducted via mobile electronic forms. Participants self-assessed their product experience and satisfaction at 14 days, 28 days, 42 days, 56 days after application. A 5-point likert scale was employed with the following scoring criteria:

Table5 Evaluation criteria table for questionnaire survey

Score	Evaluate the content
1 point	Strongly disagree/strongly dislike/very unwilling
2 points	Disagree/Dislike/Unwilling
3 points	Neither agree nor disagree
4 points	Agree/Like/Willing
5 points	Very satisfied/very liked/very willing

Result Evaluation: the satisfaction level was quantified to measure the degree of satisfaction of the respondents with the product. The proportion of each rating level for each question at different survey time points was statistically analyzed, and the satisfaction level was calculated (see the formula below). The higher the value, the higher the satisfaction.

$$\text{Satisfaction} = \frac{\text{4 points“agree”+5points“very satisfied”}}{Overall\ rating} \times 100\%$$

2.3.7 Data analysis

SPSS23.0 statistical analysis software was used for data processing. The experimental data were measurement data, which could be analyzed by t test. Paired t test was used for self-control data, and group t test was used for comparison of means between the two groups. The latter required the homogeneity of variance test, and appropriate variable transformation was performed for data with non-normal distribution or uneven variance. If the transformed data still could not meet the requirements of homogeneity of normal variance, t test or rank sum test was used. However, rank sum test was used for data with non-normal distribution (such as CV>50%).

$$\text{Rate of change} = \frac{\text{After using the sample} - \text{Baseline}}{\text{Baseline}} \times 100\%$$

2.3.8 Adverse symptom monitoring

The occurrence of skin discomfort symptoms (such as skin redness, tingling, itching, burning) during the use of the sample was monitored and recorded.

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III、Results

3.1 Number of subjects

Information of all respondents who completed the test. See appendix: subject information for details. Subject information is detailed in the table below:

Table6 Basic information of subjects

Group abbreviation	Number of subjects enrolled	Number of completers	Average age	Oldest age	Minimum age
Sample group	33	33	51	60	38
Control	34	34	47	58	34

*See appendix: subject information for details

3.2 Observation of adverse symptoms

No discomfort symptoms were monitored during the test.

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3.3 Changes in skin moisturizing parameters

Table7 Changes in the stratum corneum moisture content before and after using the sample

Groups	Number of cases	Baseline	14 days		28 days		56 days	
		mean±SD (C.U.)	mean±SD (C.U.)	Change rate%	mean±SD (C.U.)	Change rate%	mean±SD (C.U.)	Change rate%
100mg HA solid beverage	33	46.50±8.85	49.92±7.34	7.35	52.05±6.89	11.93	53.47±6.82	14.99
Control	34	45.92±7.77	46.45±6.26	1.16	47.73±6.45	3.94	48.43±9.21	5.47

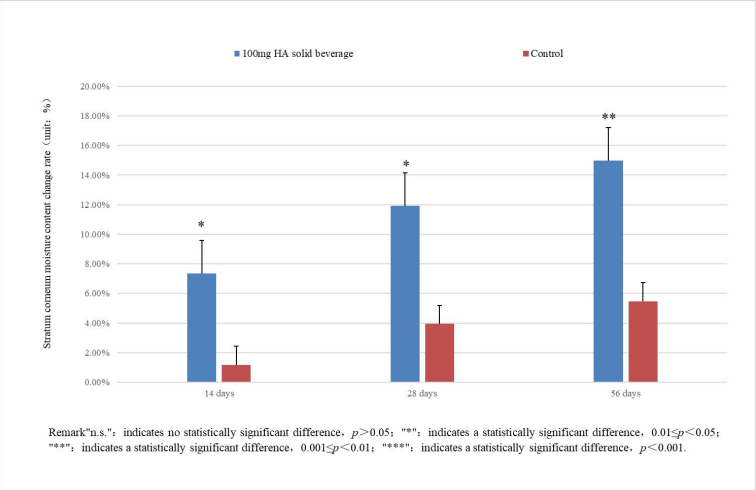

Figure 1 The change rate of the stratum corneum moisture content before and after using the sample

The results showed that:

After 14 days of 100 mg HA solid beverage use compared to control (change rate), the stratum corneum moisture content significantly increased (P<0.050).

After 28 days of 100 mg HA solid beverage use compared to control (change rate), the stratum corneum moisture content significantly increased (P<0.050).

After 56 days of 100 mg HA solid beverage use compared to control (change rate), the stratum corneum moisture content significantly increased (P<0.010).

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3.4 Evaluation of product effects on skin glossiness

Table8 Changes in the skin glossiness before and after using the sample

Groups	Number of cases	Baseline	14 days		28 days		56 days	
		mean±SD (a.u.)	mean±SD (a.u.)	Change rate%	mean±SD (a.u.)	Change rate%	mean±SD (a.u.)	Change rate%
100mg HA solid beverage	33	8.93±2.00	9.53±1.85	6.71	10.48±2.30	17.39	10.00±1.51	11.99
Control	34	8.85±1.80	8.89±2.01	0.47	8.66±2.10	-2.16	8.93±2.19	0.97

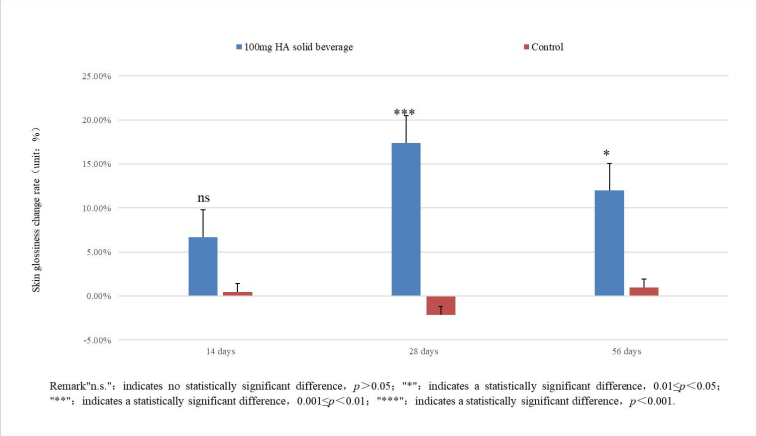

Figure 2 The change rate of the skin glossiness before and after using the sample

The results showed that:

After 14 days of 100 mg HA solid beverage use compared to control (change rate), skin glossiness showed no significant difference (P>0.050).

After 28 days of 100 mg HA solid beverage use compared to control (change rate), skin glossiness significantly increased (P<0.001).

After 56 days of 100 mg HA solid beverage use compared to control (change rate), skin glossiness significantly increased (P<0.050).

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3.5 Changes in skin repairing parameters

Table9 Changes in the skin transepidermal water loss rate (facial) before and after using the sample

Groups	Number of cases	Baseline	14 days		28 days		56 days	
		mean±SD ($g/m^2/h$)	mean±SD ($g/m^2/h$)	Change rate%	mean±SD ($g/m^2/h$)	Change rate%	mean±SD ($g/m^2/h$)	Change rate%
100mg HA solid beverage	33	20.27±4.02	19.74±3.79	-2.64	18.99±3.32	-6.31	18.98±2.74	-6.41
Control	34	22.58±4.10	21.89±4.00	-3.07	21.10±3.35	-6.57	22.65±3.84	0.29

Table10 Changes in the skin transepidermal water loss rate (scalp) before and after using the sample

Groups	Number of cases	Baseline	14 days		28 days		56 days	
		mean±SD ($g/m^2/h$)	mean±SD ($g/m^2/h$)	Change rate%	mean±SD ($g/m^2/h$)	Change rate%	mean±SD ($g/m^2/h$)	Change rate%
100mg HA solid beverage	33	20.17±3.58	18.24±3.87	-9.56	17.22±2.95	-14.62	16.74±2.66	-17.02
Control	34	18.91±3.61	18.17±3.41	-3.93	19.53±2.99	3.27	19.97±2.51	5.63

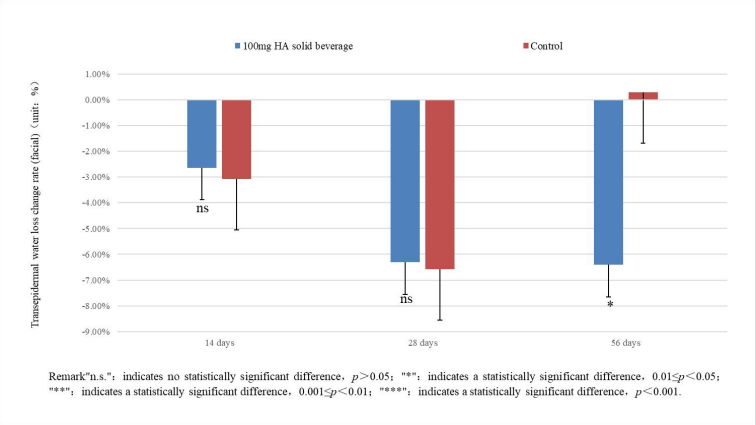

Figure 3 The change rate of the transepidermal water loss rate (facial) before and after sample use

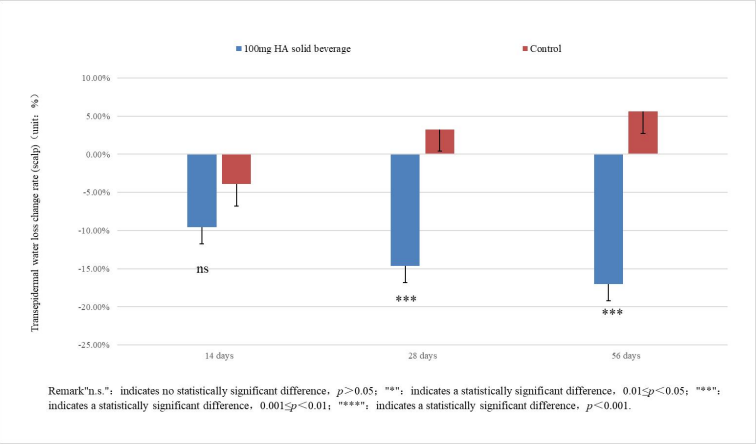

Figure 4 The change rate of the transepidermal water loss rate (scalp) before and after sample use

The results showed that：

After 14 days of 100 mg HA solid beverage use compared to control (change rate), the transepidermal water loss rate (facial) showed no significant difference (P>0.050).

After 28 days of 100 mg HA solid beverage use compared to control (change rate), the facial transepidermal water loss rate (facial) showed no significant difference (P>0.050).

After 56 days of 100 mg HA solid beverage use compared to control (change rate), the facial transepidermal water loss rate (facial) significantly decreased (P<0.050).

After 14 days of 100 mg HA solid beverage use compared to control (change rate), the transepidermal water loss rate (scalp) showed no significant difference (P>0.050).

After 28 days of 100 mg HA solid beverage use compared to control (change rate), the scalp transepidermal water loss rate (scalp) significantly decreased (P<0.001).

After 56 days of 100 mg HA solid beverage use compared to control (change rate), the scalp transepidermal water loss rate (scalp) significantly decreased (P<0.001).

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3.6 Investigate the effect of the product on skin tone parameters.

Table11 Changes in the skin yellowness (b* value) before and after using the sample

Groups	Number of cases	Baseline	14 days		28 days		56 days	
		mean±SD (a.u.)	mean±SD (a.u.)	Change rate%	mean±SD (a.u.)	Change rate%	mean±SD (a.u.)	Change rate%
100mg HA solid beverage	33	17.19±1.31	16.36±1.67	-4.83	15.73±1.74	-8.51	15.20±1.90	-11.58
Control	34	16.62±1.87	16.11±2.22	-3.07	15.55±2.14	-6.42	15.53±2.31	-6.54

Table12 Changes in the skin color individual typology angle (ITA°) before and after using the sample

Groups	Number of cases	Baseline	14 days		28 days		56 days	
		mean±SD (a.u.)	mean±SD (a.u.)	Change rate%	mean±SD (a.u.)	Change rate%	mean±SD (a.u.)	Change rate%
100mg HA solid beverage	33	28.32±6.94	29.04±7.79	2.52	30.77±6.92	8.66	32.00±6.95	12.98
Control	34	31.99±6.37	32.55±7.66	1.74	33.56±6.33	4.92	33.90±6.68	5.97

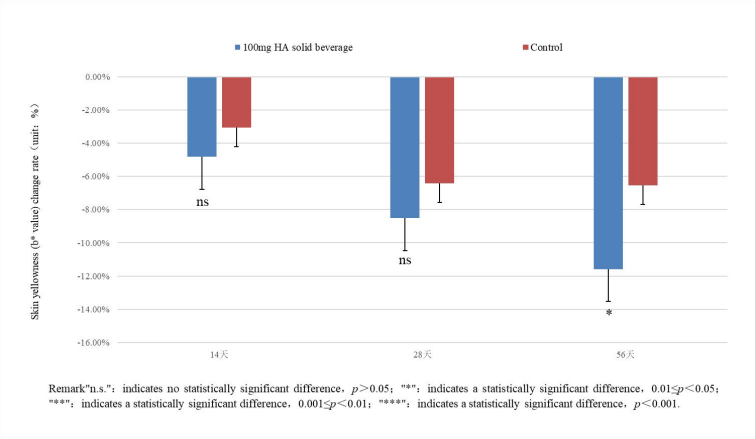

Figure 5 The change rate of the skin yellowness (b* value) before and after sample use

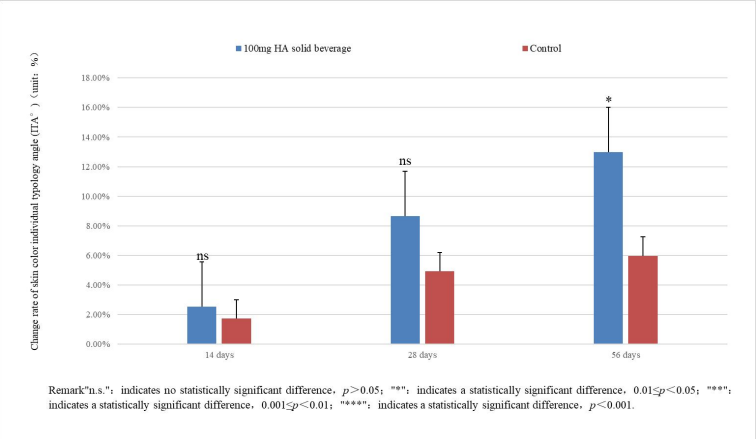

Figure 6 The change rate of the skin color individual typology angle (ITA°) before and after sample use

The results showed that:

After 14 days of 100 mg HA solid beverage use compared to control (change rate), the skin yellowness (b* value) showed no significant difference (P>0.050).

After 28 days of 100 mg HA solid beverage use compared to control (change rate), the skin yellowness (b* value) showed no significant difference (P>0.050).

After 56 days of 100 mg HA solid beverage use compared to control (change rate), the skin yellowness (b* value) significantly decreased (P<0.050).

After 14 days of 100 mg HA solid beverage use compared to control (change rate), the skin color individual typology angle (ITA°) showed no significant difference (P>0.050).

After 28 days of 100 mg HA solid beverage use compared to control (change rate), the skin color individual typology angle (ITA°) showed no significant difference (P>0.050).

After 56 days of 100 mg HA solid beverage use compared to control (change rate), the skin color individual typology angle (ITA°) significantly increased (P<0.050).

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3.7 Investigate the pore-refining efficacy of the product

Table13 Changes in the pore area percentage before and after using the sample

Groups	Number of cases	Baseline	14 days		28 days		56 days	
		mean±SD (%)	mean±SD (%)	Change rate%	mean±SD (%)	Change rate%	mean±SD (%)	Change rate%
100mg HA solid beverage	33	4.89±1.05	4.74±1.26	-3.06	4.49±1.31	-8.30	4.31±1.04	-12.01
Control	34	4.82±1.24	5.06±1.38	4.92	5.05±1.69	4.87	4.71±1.01	-2.34

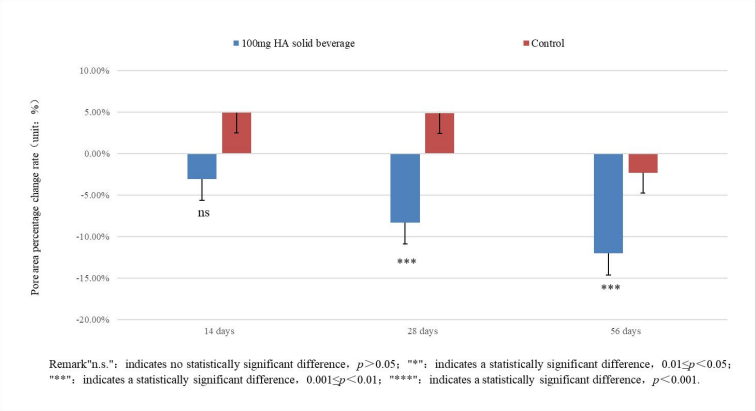

Figure 7 The change rate of the pore area percentage before and after sample use

The results showed that:

After 14 days of 100 mg HA solid beverage use compared to control (change rate), the pore area percentage showed no significant difference (P>0.050).

After 28 days of 100 mg HA solid beverage use compared to control (change rate), the pore area percentage significantly decreased (P<0.001).

After 56 days of 100 mg HA solid beverage use compared to control (change rate), the pore area percentage significantly decreased (P<0.001).

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3.8 Evaluation of changes in consumer usage sensation

Table 14 Consumer usage sensation evaluation results for sample group

Topic	14 days (satisfaction %)	28 days (satisfaction %)	42 days (satisfaction %)	56 days (satisfaction %)
Overall satisfaction with the sample	100.00%	100.00%	100.00%	100.00%
Satisfaction with the sample's aroma	100.00%	96.97%	100.00%	100.00%
Satisfied with the taste	100.00%	96.97%	96.97%	100.00%
Like the product	100.00%	100.00%	100.00%	100.00%
Willing to continue using and purchasing the product	100.00%	100.00%	100.00%	100.00%
Willing to recommend to friends	100.00%	96.97%	100.00%	100.00%
After consumption, the skin becomes more hydrated	93.94%	100.00%	100.00%	100.00%
After consumption, the skin becomes softer	96.97%	100.00%	100.00%	100.00%
After consumption, the skin becomes more elastic	93.94%	96.97%	96.97%	100.00%
After consumption, the skin becomes firmer	90.91%	96.97%	96.97%	100.00%
After consumption, the skin becomes more plump	93.94%	100.00%	100.00%	100.00%
After consumption, facial fine lines are reduced	84.85%	96.97%	96.97%	96.97%
After consumption, the overall facial wrinkles are reduced	90.91%	93.94%	96.97%	100.00%
After consumption, the number of crow's feet around the eyes decreases	87.88%	93.94%	96.97%	100.00%
After consumption, the fine lines at the corners of the eyes become shallower	84.85%	93.94%	100.00%	100.00%
After consumption, the number of fine lines under the eyes decreases	87.88%	90.91%	100.00%	100.00%
After consumption, the fine lines under the eyes become shallower	87.88%	90.91%	100.00%	100.00%
Overall experience is good	100.00%	100.00%	100.00%	100.00%
There are no discomforts during use	100.00%	100.00%	100.00%	100.00%

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Table 15 Consumer usage sensation evaluation results for control

Topic	14 days (satisfaction %)	28 days (satisfaction %)	42 days (satisfaction %)	56 days (satisfaction %)
Overall satisfaction with the sample	100.00%	100.00%	100.00%	100.00%
Satisfaction with the sample's aroma	100.00%	100.00%	100.00%	100.00%
Satisfied with the taste	100.00%	100.00%	100.00%	100.00%
Like the product	100.00%	100.00%	100.00%	100.00%
Willing to continue using and purchasing the product	100.00%	100.00%	100.00%	100.00%
Willing to recommend to friends	100.00%	100.00%	100.00%	100.00%
After consumption, the skin becomes more hydrated	100.00%	100.00%	100.00%	100.00%
After consumption, the skin becomes softer	100.00%	100.00%	96.43%	100.00%
After consumption, the skin becomes more elastic	96.43%	96.43%	96.43%	96.43%
After consumption, the skin becomes firmer	92.86%	92.86%	96.43%	96.43%
After consumption, the skin becomes more plump	96.43%	96.43%	96.43%	96.43%
After consumption, facial fine lines are reduced	82.14%	92.86%	96.43%	100.00%
After consumption, the overall facial wrinkles are reduced	89.29%	96.43%	96.43%	96.43%
After consumption, the number of crow's feet around the eyes decreases	82.14%	96.43%	96.43%	96.43%
After consumption, the fine lines at the corners of the eyes become shallower	85.71%	89.29%	96.43%	96.43%
After consumption, the number of fine lines under the eyes decreases	89.29%	96.43%	96.43%	100.00%
After consumption, the fine lines under the eyes become shallower	85.71%	92.86%	92.86%	96.43%
Overall experience is good	96.43%	100.00%	100.00%	100.00%
There are no discomforts during use	100.00%	100.00%	100.00%	100.00%

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Conclusion

This randomized, controlled clinical study enrolled 67 healthy Chinese female participants aged 30 to 60 years. The participants exhibited self-reported skin laxity, xerosis, and crow's feet (wrinkle severity ≥ grade 2 as professionally assessed), and had facial dyschromia (dullness, epidermal hyperpigmentation, solar lentigines), T-zone seborrhea, and at least one distinct pigmented lesion in the test area with an ITA° difference >10° compared to adjacent skin and a diameter ≥3mm (excluding freckles, pigmented nevi, or other topically recalcitrant conditions). The study comprised two groups: the sample group (n=33) used a solid beverage containing 100 mg HA; and the control (n=34) used a placebo solid beverage. Following 56 days of continuous product use, the results demonstrated significant efficacy in the following aspects:

- **The instrument measurement results (facial) showed that:**

After 14 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant increase in the stratum corneum moisture content ($P<0.050$). After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant increase in the stratum corneum moisture content ($P<0.050$). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage exhibited a significant increase in the stratum corneum moisture content ($P<0.010$). Therefore, under the conditions of this study, the test product was considered to have moisturizing efficacy.

After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant increase in the skin glossiness ($P<0.001$). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant increase in the skin glossiness ($P<0.050$).

After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the transepidermal water loss rate (facial) ($P<0.050$). Therefore, under the conditions of this study, the test product was considered to have repairing efficacy.

After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the skin yellowness (b* value) ($P<0.050$).

After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant increase in the skin color individual typology angle (ITA°) ($P<0.050$). Therefore, under the conditions of this study, the test product was considered to have whitening efficacy.

After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the pore area percentage ($P<0.001$). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant decrease in the pore area percentage ($P<0.001$).

- **The questionnaire results demonstrated the following findings:**

Following 14, 28, 42, and 56 days of product use, participants expressed high satisfaction with the sample's overall quality, fragrance, and palatability, indicating a strong preference for the product, willingness to continue usage and repurchase, and intention to recommend it to others. Post-consumption, users reported noticeable improvements in skin hydration, softness, elasticity, firmness, and plumpness. They also perceived reductions in facial dryness lines, crow's feet, and under-eye fine lines, overall wrinkle lightening, and diminished depth of periorbital wrinkles. Additionally, participants reported generally positive subjective experiences. Critically, 100% of subjects reported no adverse effects throughout the study period, with comprehensive outcomes detailed in the self-assessment documentation.

- **Conclusions:**

The instrument measurement results indicated that the sample group (100 mg HA solid beverage) demonstrated moisturizing, repairing, firming, and whitening efficacy, along with significant improvements in skin tone brightening and pore refinement.

The self-assessment questionnaire results indicated that the sample group (100 mg HA solid beverage) demonstrated firming efficacy.

No adverse effects on skin health were found.

- **The instrument measurement results (scalp) showed that:**

After 28 days of use compared to the control (change rate), the 100 mg HA solid beverage demonstrated a significant decrease in the transepidermal water loss rate (scalp) ($P<0.001$). After 56 days of use compared to the control (change rate), the 100 mg HA solid beverage showed a significant decrease in the transepidermal water loss rate (scalp) ($P<0.001$). Therefore, under the

conditions of this study, the test product was considered to have repairing efficacy.

- **Conclusions:**

The instrument measurement results indicated that, under the conditions of this study, the sample group (100 mg HA solid beverage) demonstrated repairing efficacy.

No adverse effects on skin health were found.

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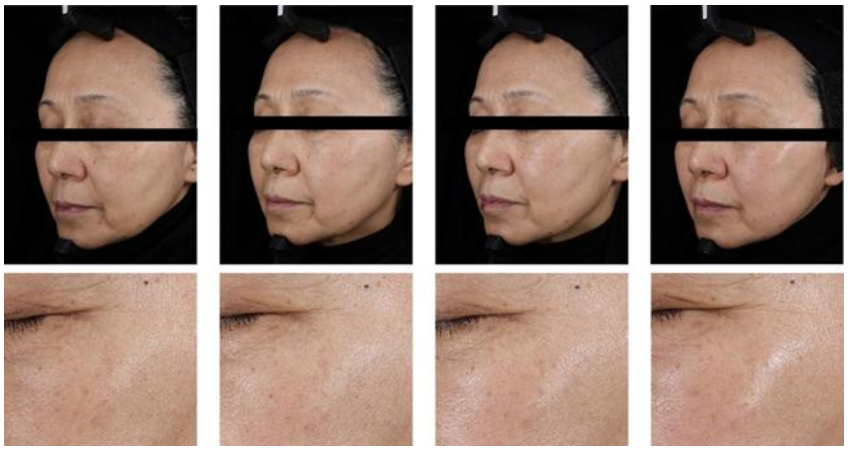
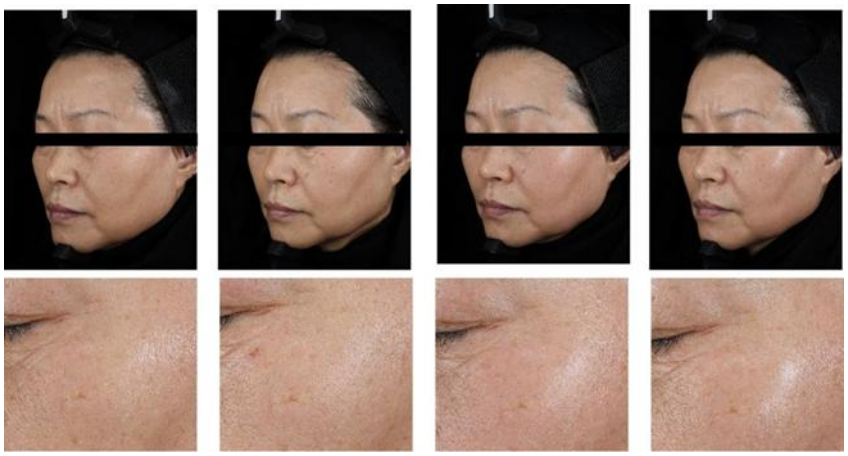
Appendix 1: Figure Legend

Group	Number	Legend of skin glossiness improvement			
		Baseline	14 days	28 days	56days
Sample group	No.16				
	No.23				

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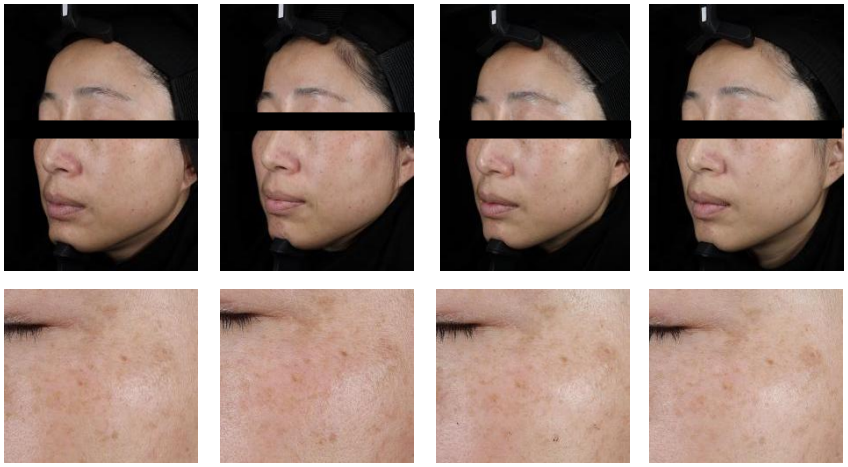
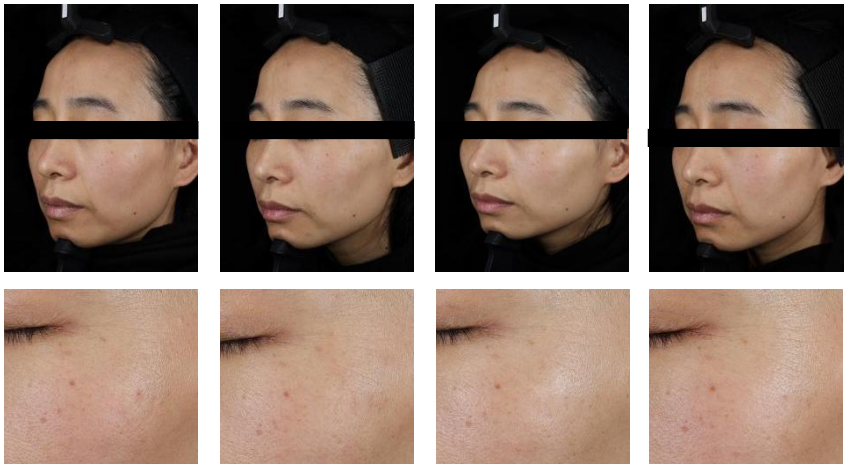
Group	Number	Legend of skin glossiness improvement			
		Baseline	14 days	28 days	56days
Control	No.151				
	No.168				

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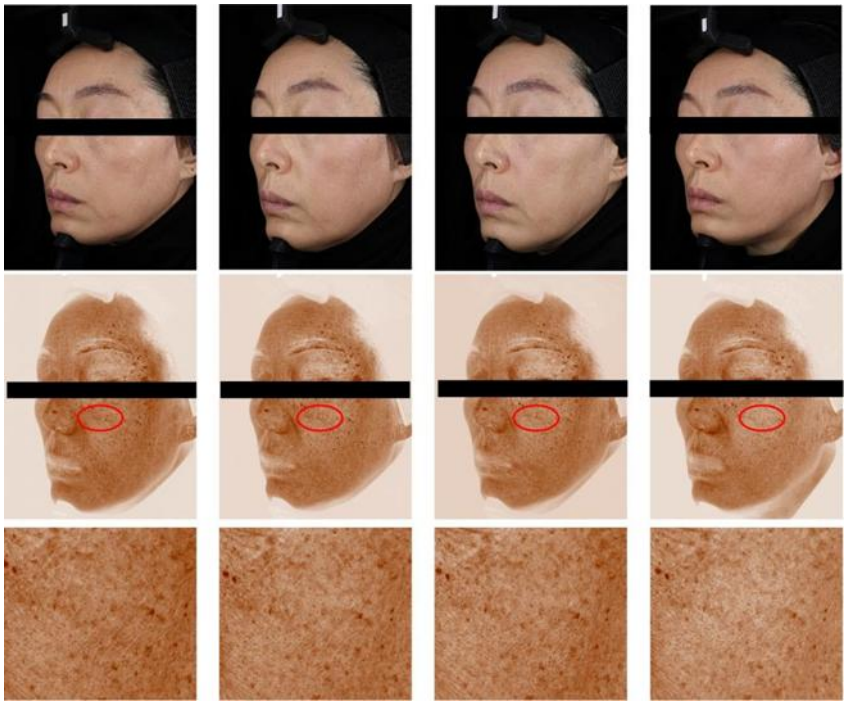
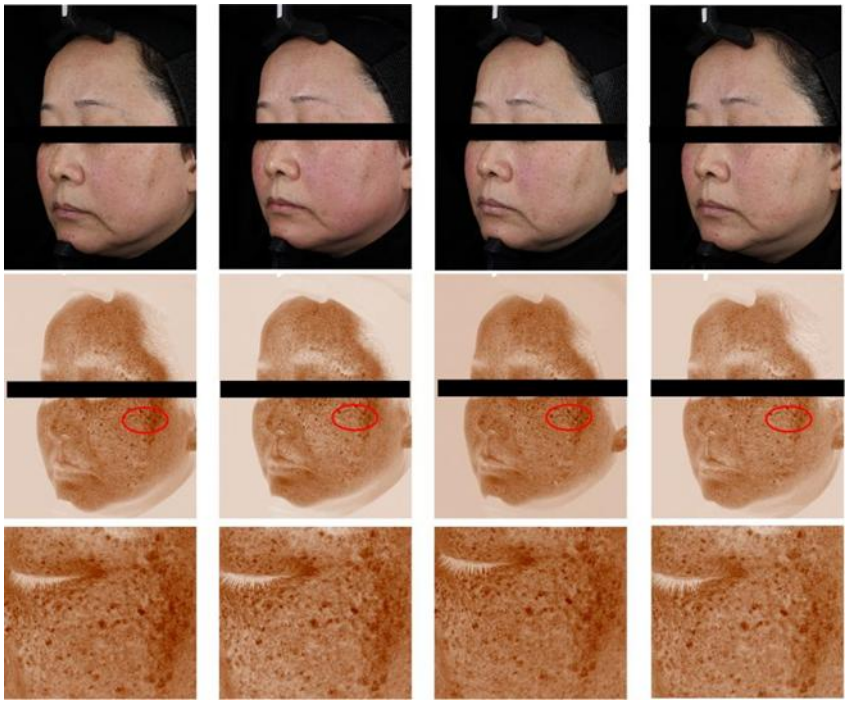
Group	Number	Legend of skin tone improvement			
		Baseline	14 days	28 days	56days
Sample group	No.1				
	No.12				

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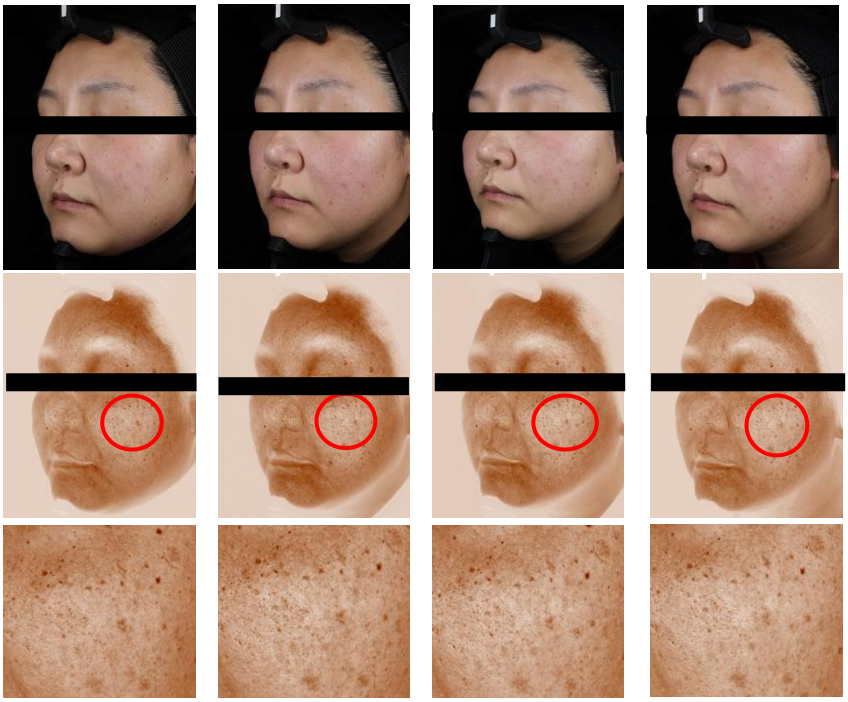
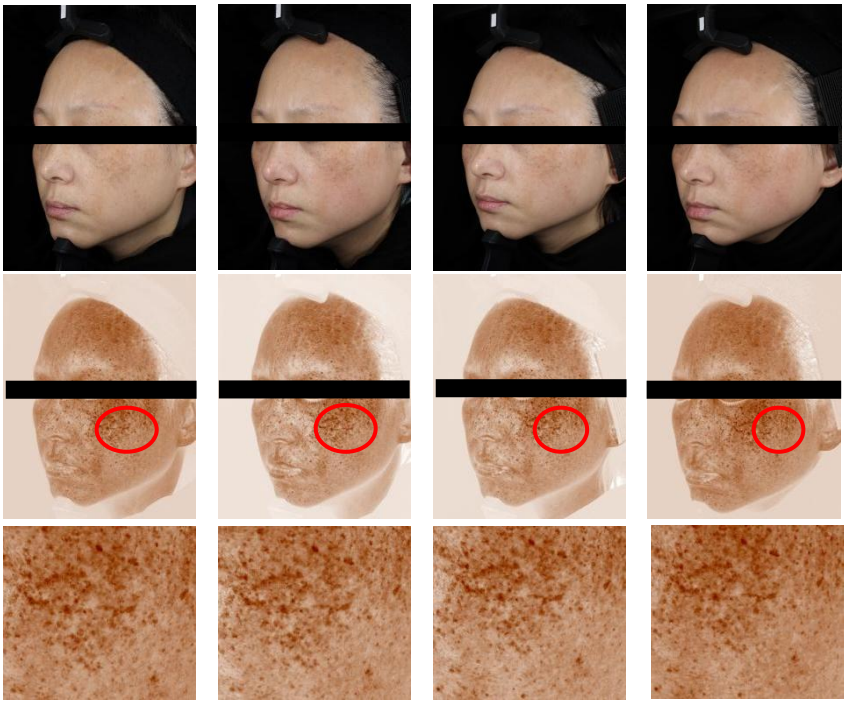
Group	Number	Legend of skin tone improvement			
		Baseline	14 days	28 days	56days
Control	No.150				
	No.160				

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Appendix 2: Subject information

Sample group (100 mg HA solid beverage)

Serial Number	Respondent No.	Initials	Gender	Age	Wrinkle grade screening results
1	1	ZMH	F	50	4
2	2	ZHJ	F	60	4
3	3	CX	F	52	3
4	4	GF	F	52	4
5	6	ZWJ	F	56	4
6	7	ZP	F	60	5
7	8	SXM	F	53	3
8	9	FYZ	F	60	4
9	10	DYQ	F	44	3
10	11	CLJ	F	56	4
11	12	ZJU	F	47	3
12	13	ZJH	F	55	4
13	14	WJL	F	50	3
14	15	FXM	F	42	3
15	16	WJS	F	60	5
16	17	PYH	F	41	2
17	18	GL	F	54	4
18	20	YLF	F	60	5
19	21	LM	F	56	5
20	22	SZA	F	54	5
21	23	ZY	F	58	4
22	24	JY	F	46	4
23	25	SSY	F	41	3
24	26	XCF	F	56	4
25	27	ZFJ	F	51	3
26	28	WYT	F	44	3
27	29	XT	F	44	3
28	30	WYZ	F	48	2
29	31	LJ	F	48	3
30	32	CQY	F	48	3
31	33	QY	F	44	3
32	34	HSH	F	59	4
33	35	SCH	F	38	2

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Control (solid beverage)

Serial Number	Respondent No.	Initials	Gender	Age	Wrinkle grade screening results
1	141	CH	F	44	3
2	143	CQH	F	51	3
3	144	YQ	F	43	4
4	145	HJH	F	58	4
5	146	HCR	F	48	5
6	147	SLL	F	56	3
7	148	SGZ	F	51	5
8	149	LLJ	F	44	3
9	150	LL	F	39	2
10	151	LY	F	44	3
11	152	CS	F	40	3
12	153	WP	F	43	3
13	154	YLN	F	50	5
14	155	ZY	F	43	3
15	156	LY	F	43	2
16	157	CDY	F	39	3
17	158	GPH	F	52	4
18	159	XPH	F	56	4
19	160	ZLN	F	49	3
20	161	CHX	F	50	5
21	162	GBQ	F	52	4
22	163	YY	F	44	3
23	164	ZHY	F	51	4
24	165	LTY	F	51	4
25	166	FJ	F	56	4
26	167	ZLX	F	49	3
27	168	TX	F	38	3
28	169	HTY	F	55	5
29	170	XYM	F	50	3
30	171	XLP	F	44	3
31	172	HXY	F	54	5
32	173	NXJ	F	40	2
33	174	WJ	F	34	3
34	175	YWY	F	45	2

End of report