Study on Moisturizing effect of cosmetic serum

[Summary]

1. Objective

The purpose of this study was to assess the moisturizing effect of a cosmetic serum, 'Risou Repair Gel' toward women who had a problem with their dry skin, through the time-series observation and comparison of changes in their skin conditions.

2. Time schedule and method of the study

1) Time schedule

The study was conducted on Tuesday, July 30th, 2019. The research participants were asked for the baseline measurements after face-wash with a store-bought cleansing agent and the following skin habituation in the air-conditioned room for 20 minutes with its temperature at 21 ± 1℃ and humidity at 50 ± 5RH%. After the application of the test sample, the key measurements were made at 20 and 360 minutes for each participant.

2) Screening of the research participants

A total of 15 participants were individually drafted from 24 applicants by a principal investigator, evaluated by both selection and exclusion criteria provided in advance.

3) Selection criteria

①Females in their age from 35 to 59 y.o.
②Those who are aware of dry skin on a day-to-day basis
③Those who can agree with the informed consent in a written document on a voluntarily basis

4) Application method of a test sample

①To apply a pushful of serum in a palm
②To smooth lightly and evenly onto the face

③To facepalm for 1-2 minutes to soothe the skin surface

5) Evaluation items

①Stratum corneum water content

Single-time measurement was made on a point where a vertical line from a tail of the right eye and a horizontal line from a wing of the right nose come across in each applicant's face, using Corneometer® CM825. The measurement unit was counted as an index and the bigger number indicates the trend to contend much more water in the tissue of the stratum corneum.

②Skin intensity (L*value)

Single-time measurement was made on a point where a vertical line from a tail of the right eye and a horizontal line from a wing of the right nose come across in each applicant's face, using SPECTROPHOTOMETER NF555, to solve for 'L*value' under 'CIE LAB' method.

③Skin elasticity

Single-time measurement was made on a point where a vertical line from a tail of the right eye and a horizontal line from a wing of the right nose come across in each applicant's face, using Cutometer® MPA580, to solve for three kinds of elasticity ratio, R2 (General elasticity), R5 (Net elasticity), R7 (Regression elasticity). A value closer to 1.0 is likely to tend higher elasticity.

④Skin texture

A four-degree evaluation by a trained expert was conducted on pictures of a point where a vertical line from a tail of the right eye and a horizontal line from a wing of the right nose come across in each applicant's face. The degrees are '2: improved', '1: little improved', '0: not improved, and '-1: worsened', in comparison to the baseline that was set at '0'.

⑤Subjective assessment

A post-implementation questionnaire was conducted for a self-evaluation about their skin conditions in the areas of moisture, elasticity, texture, and intensity by nine degrees from '1: very bad' to '9: very good'.

6) Statistical processing

'ITT' was adopted for the analytical criterion. The index numbers and scores in each survey item were indicated by 'mean±SD'. 'Paired t-test' was commonly adopted for the comparison of values between before and after the intervention, except 'skin texture' that used 'Wilcoxon signed-rank test' instead. The multiplicity of data was disregarded, and no missing value was detected. The two-sided test pegged a significant difference when it obtained a result of 'P<0.05'. A software, 'Statcel4 (Hisae Yanai, 2015)' was used for all the statistical analyses in this research.

3. Results

A total of 15 participants started the test and all of them completed it together. Therefore, the full analysis set consists of 15 participants at their age from 38 to 56 y.o., avg 48.7±5.7.

①Stratum corneum water content

A significant improvement was observed at both 20 and 360 min after the application, compared with the baseline.

②Skin intensity (L*value)

Significant deterioration was observed at 20 min after the application, however, it recovered to the equivalent level with no significant difference after 360 mins, compared with the baseline.

③Skin elasticity

A significant improvement was observed in R2 values at both 20 and 360 min after the application, but not in R5 and R7, compared with the baseline.

④Skin texture

No significant difference was observed, compared with the baseline.

⑤Subjective assessment

The significant improvements were observed in all four areas of their skin conditions at both 20 and 360 min after the application, compared with those scores before the application.

4. Conclusion

The research finding suggests that the use of ‘Risou Repair Gel’ for women who were aware of dry skin on a day-to-day basis was significantly effective in improvement of ‘stratum corneum water content’ and ‘skin elasticity (R2)’ at both 20 and 360 min after the application, as well as the scores of their self-evaluation for all four areas of the skin conditions at the same time frames, 20 and 360 mins. And confirmed that there had been no adverse effect reported during the research.