

**Antiwrinkle effect of the cream containing Chlorella (*Chlorella pyrenoidosa*)  
extract**

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**[Study Objectives]**

We already [reported](#) the antiwrinkle effect of the cream containing Chlorella extract in 2013. This time we set up a placebo group and conducted a double-blind, placebo-controlled trial, aiming to make a stricter study on its effect than the previous one.

**[Method of experiments]**

We conducted a controlled trial regarding before and after use of the cream with 42 subjects of healthy women between the ages of 35 and 55. We had those subjects use the cream containing Chlorella extract or placebo twice a day (in the morning and evening) for 8 weeks by applying appropriate volume (approx. 0.5 g) of the testing article on the entire face after usage of basic skin care products. The subjects were required to visit the specified clinic on Day 1, Week 4 and Week 8 for the evaluation of the skin type and we harvested their skin replicas at the corner of the right eye.

**[Results]**

(1) Wrinkle grade evaluation

Regarding the change in visual evaluation by the doctor, significant improvement was recognized at Week 8 in both the cream containing Chlorella extract (Active) group and the Placebo group. Regarding the change in wrinkles, Active group showed significant improvement at Week 4 and 8 compared to placebo group (Fig. 1).

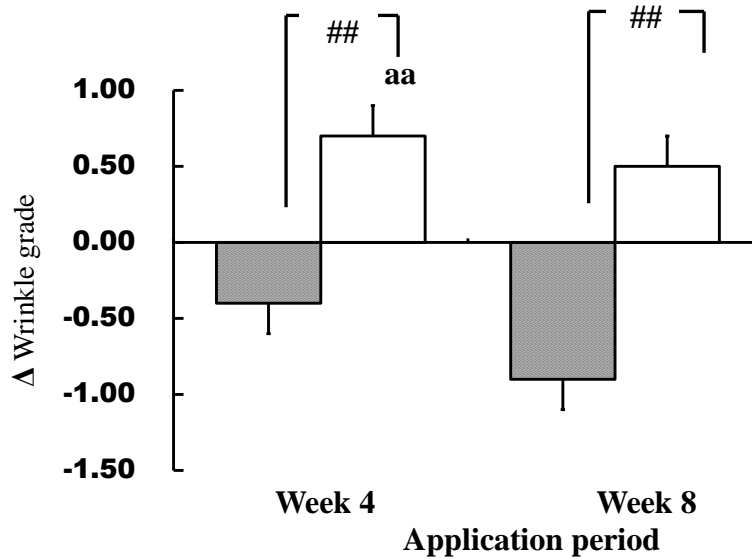
(2) Skin type measurement

Significant increase in relative ratio values of cuticle moisture was shown at Week 4 and 8 in both Active and Placebo groups compared to the starting day (Fig. 2).

(3) Analysis of skin replica

Regarding the change in the number of wrinkles at Week 8, significant decrease was shown in Active group compared to Placebo group (Fig. 3). Active group also showed tendency toward improvement in items other than the number of wrinkles compared to Day 1. Examples of significant effect are shown in Fig. 4.

Based on the results above, the cream containing Chlorella extract (Active) group was found to improve the number of wrinkles at Week 4 of application, as well as wrinkle grade at Week 4 and 8 compared to Placebo group. Increase in the value of cuticle moisture at Week 8 also suggests that Chlorella extract could have effects on improvement of wrinkles by moisturizing and other mechanism.



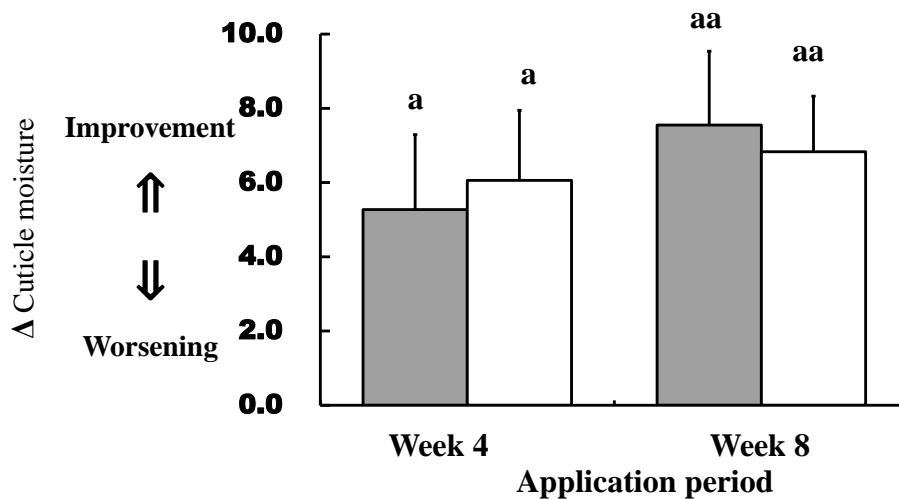
**Fig. 1** Shift of the amount of change ( $\Delta$  value) in wrinkle grade

Bar: standard error

▨: Active group (n=21), □: Placebo group(n=20)

##: Mann-Whitny U test showed Significant difference compared to Placebo group (p<0.01).

aa: Steel test showed significant difference within the group compared to the application starting day (p<0.01)



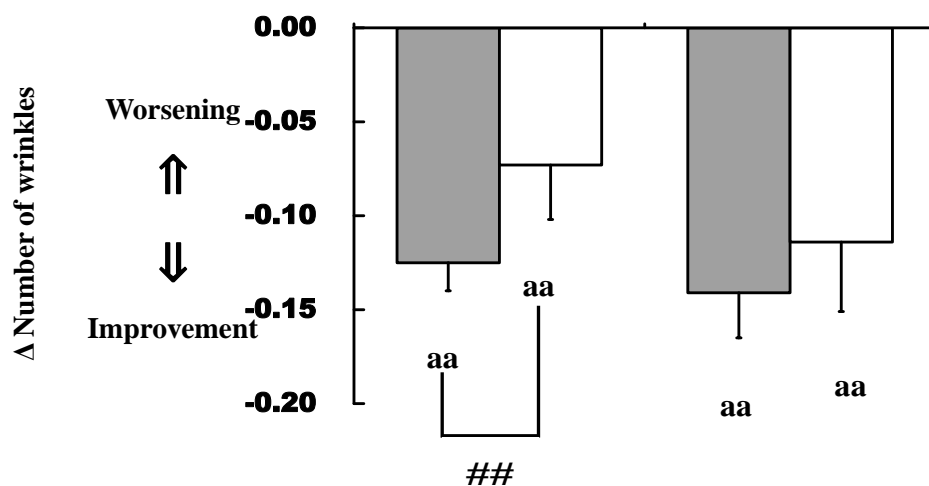
**Fig. 2** Shift of the amount of change ( $\Delta$  value) in measurement value of skin type

Bar: standard error

▨: Active group (n=21), □: Placebo group(n=20)

aa: Steel test showed significant difference within the group compared to t(p<0.01)

a: Steel test showed significant difference within the group compared to the application starting day (p<0.05)



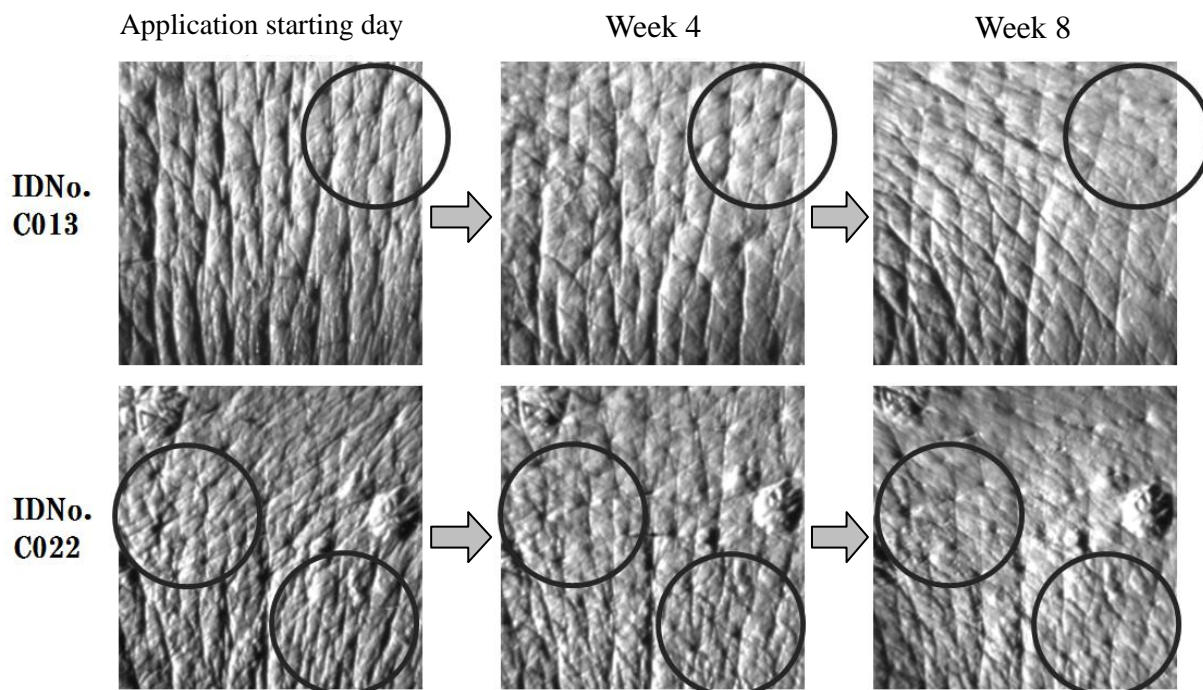
**Fig. 3** Shift of the change ( $\Delta$  value) in replica analytical value

Bar: standard error

▨: Active group (n=21), □: Placebo group(n=20)

##: Mann-Whitny U test showed Significant difference compared to Placebo group (p<0.01).

aa: Steel test showed significant difference within the group compared to the application starting day (p<0.01)



**Fig. 4** Examples of significant effect on wrinkles identified by analysis of skin replica at the corner of the right eye

Inside of a circle: region of significant improvement

<<Details>>

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Title:	<b>Antiwrinkle effect of the cream containing Chlorella (<i>Chlorella pyrenoidosa</i>) extract</b>
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