

Evaluation of a Sonic Applicator on Skin Elasticity and Wrinkles Compared to Manual Application and Performance With Two Eye Care Products

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INTRODUCTION

Pacific Bioscience Laboratories, Inc. has developed a sonic applicator that is a handheld, rechargeable infusion system used for applying cosmetic skincare products. The sonic applicator is designed using a magnetic motor that generates sonic pulses (at over 7500 times per minute) to move a soft applicator in a gentle massaging motion over the skin surface. Skin care products such as eye creams and serums are applied to the concave surface of the applicator and placed lightly on the skin surface. When the sonic applicator is turned on, users slowly move the applicator tip over the skin surface in small circles or figure eight movements around the eye area (e.g. crow's feet and under eye area).

OBJECTIVES

To measure changes in skin elasticity and wrinkle analysis around the eye area in two randomized, split-face, 12-week studies with the sonic applicator. The two studies were designed for: 1) comparing performance to manual application of a skin care serum for the eyes and 2) comparing performance of two eye serums.

MATERIALS AND METHODS

Two studies were conducted to assess the performance of the sonic applicator when compared with manual application or when used with different serums.

Study I

Twenty-two women (ages 35 to 65, Fitzpatrick skin types I-III, with mild to moderate signs of aging) were enrolled in a study comparing application of a study serum (Serum A) applied manually versus with the sonic applicator.

Treatment/application method was randomized to left or right eye area. Participants applied Serum A with the sonic applicator for 30 seconds using small, circular, overlapping movement; the same amount of serum was applied manually to the opposite side.

Study II

Fifty-five women (ages 35 to 65, Fitzpatrick skin types I-III, with mild to moderate signs of aging) were enrolled in a 12-week study comparing two study serums applied with the sonic applicator. Serums (Serum A and B) were randomized to left or right eye area. In both studies, participants were instructed to use the products twice daily during the study.

MEASUREMENTS AND ANALYSIS

Skin elasticity measurements (Cutometer; Courage- Khazaka electronic GmbH, Cologne, Germany), photographs (VISIA CR; Canfield Scientific, NJ, USA), and survey questionnaires were captured at each visit (baseline, 2, 4, 8, and 12 weeks). Wrinkle reduction was analyzed using Vaestro Image Analysis Toolkit, v 2.0 (Canfield Scientific, Fairfield, NJ, USA). In each study, data was statistically compared between the treatments and to baseline measurements using paired t-tests.

RESULTS: STUDY I

Skin Elasticity:

The side of the face randomized to sonic application had a greater improvement in gross skin elasticity (R2). At 12 weeks, the side of the face randomized to sonic application had a significant improvement in R2 over baseline measurements ($p=0.036$).

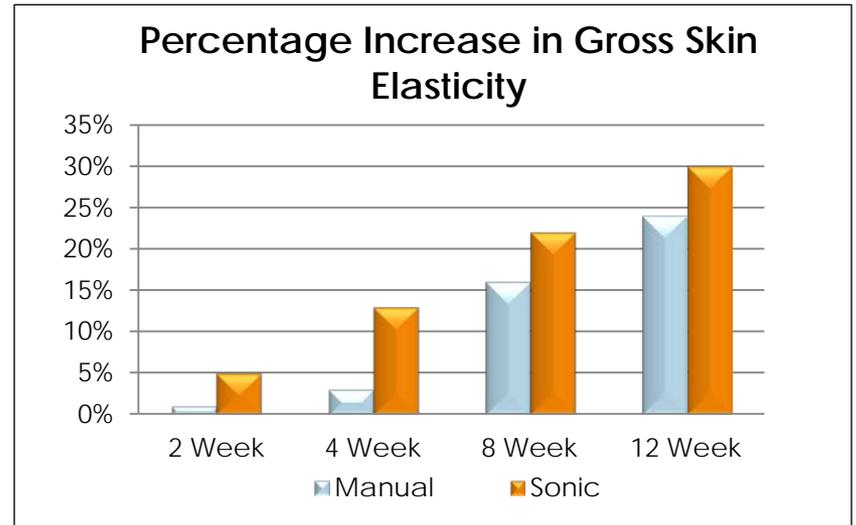


Figure 1. Average individual percentage increase in Gross skin elasticity (R2) for sonic and manual application of the study serum.

Table 1. Comparison of measured wrinkle count reduction between sonic and manual application of the study serum.

Measurement	Treatment	15 min minus BL	2 week minus BL	4 week minus BL	8 week minus BL	12 week minus BL
*Statistically significant improvement over baseline measurements						
Mean Reduction in Mean Wrinkle Count from baseline	Sonic	-3.47*	-4.88*	-4.35*	-4.35*	-4.35*
	Manual	-0.24	-0.59	-1.41	-2.29*	-2.35*
p-values between treatments (Sonic versus manual)						
**Statistically significant improvements in wrinkle count for Sonic over manual application at the 15 min, 2 week and 12 week time points.						
Mean Wrinkle Count		p=0.033**	p=0.002**	p=0.075	p=0.076	p=0.05**

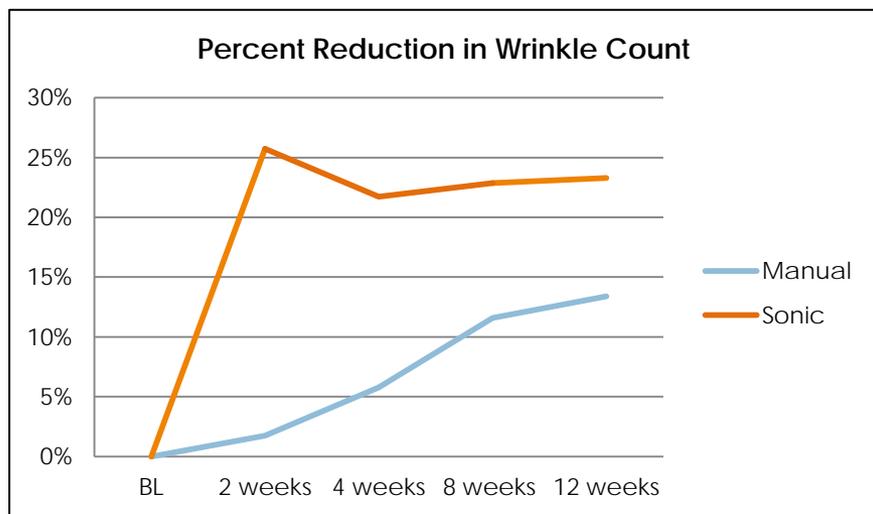


Figure 2. Average individual percent reduction in wrinkle count from baseline for both manual and sonic application of the study serum.

Wrinkle Analysis:

Serum A applied with the sonic applicator resulted in a faster and greater reduction in wrinkle count with significant differences between the two methods of application at both 2 and 12 weeks ($p < 0.01$ and $p = 0.05$, respectively).

Figure 3. A study subject at baseline and following 12 weeks use of the sonic applicator plus Serum A.



Figure 4. A study subject at baseline and following 12 weeks use of the sonic applicator plus Serum A.



Study participants favored the sonic application method over manual application of the study serum at all time points. Overall, the majority of the participants reported great and faster improvement in their skin compared to manual application.

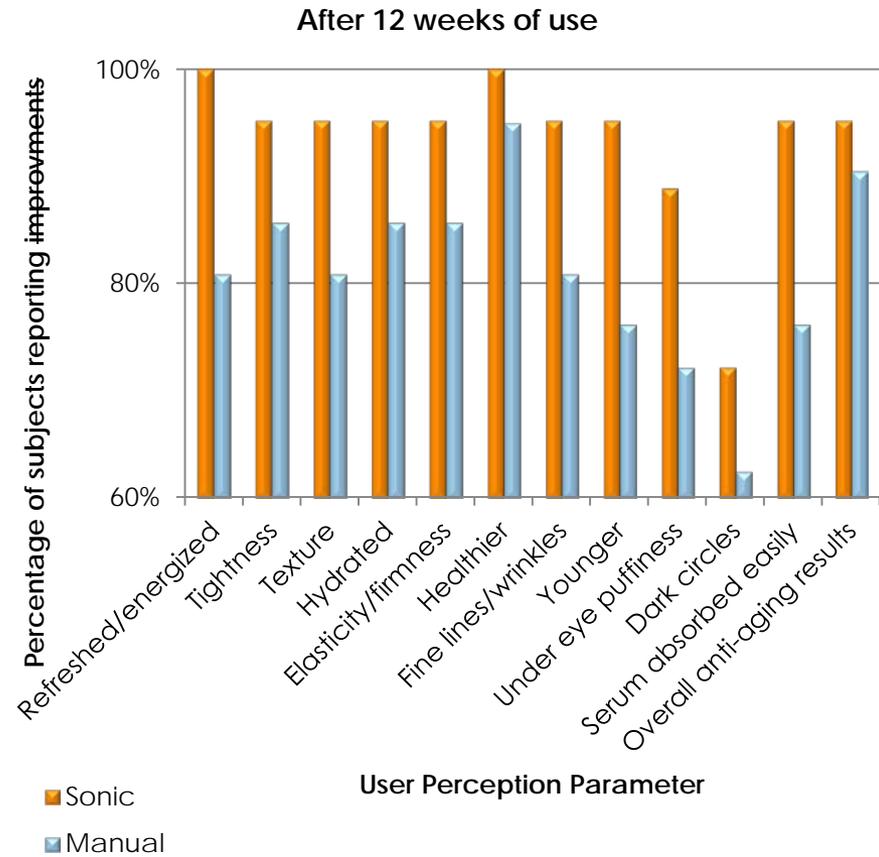


Figure 5. Questionnaire data of subject perception after 12 weeks of study product use comparing manual to sonic application of the study serum.

RESULTS: STUDY II

Skin Elasticity: With use of the sonic applicator, a significant increase in net skin elasticity (R5) was measured on the sides randomized to Serum A compared to the Serum B at 8 week and 12 weeks ($p=0.01$ and 0.05 ; respectively).

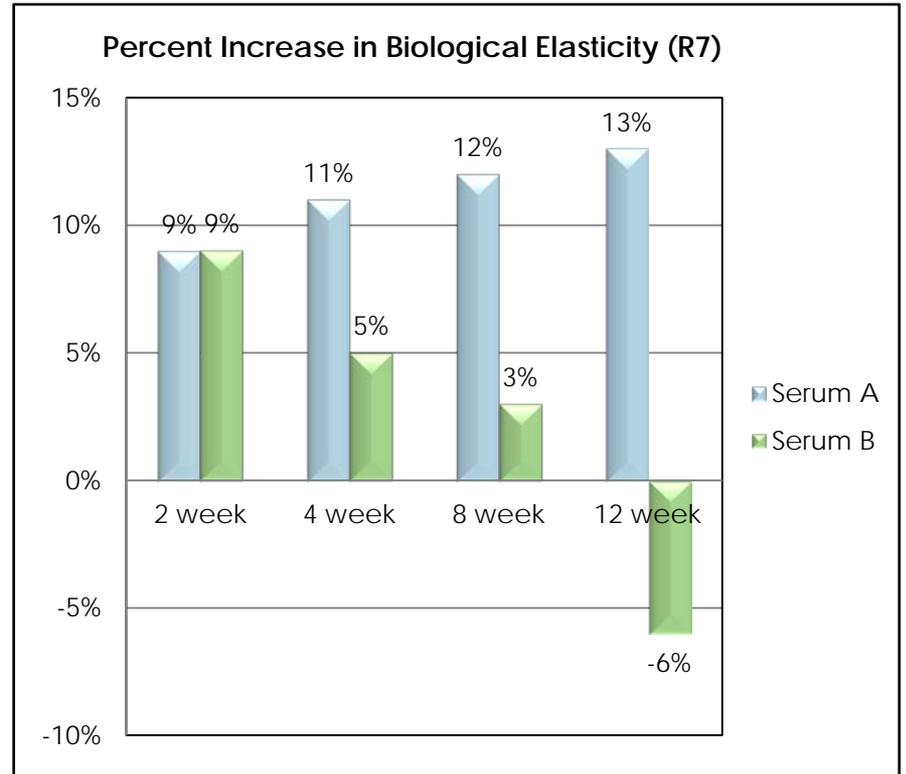
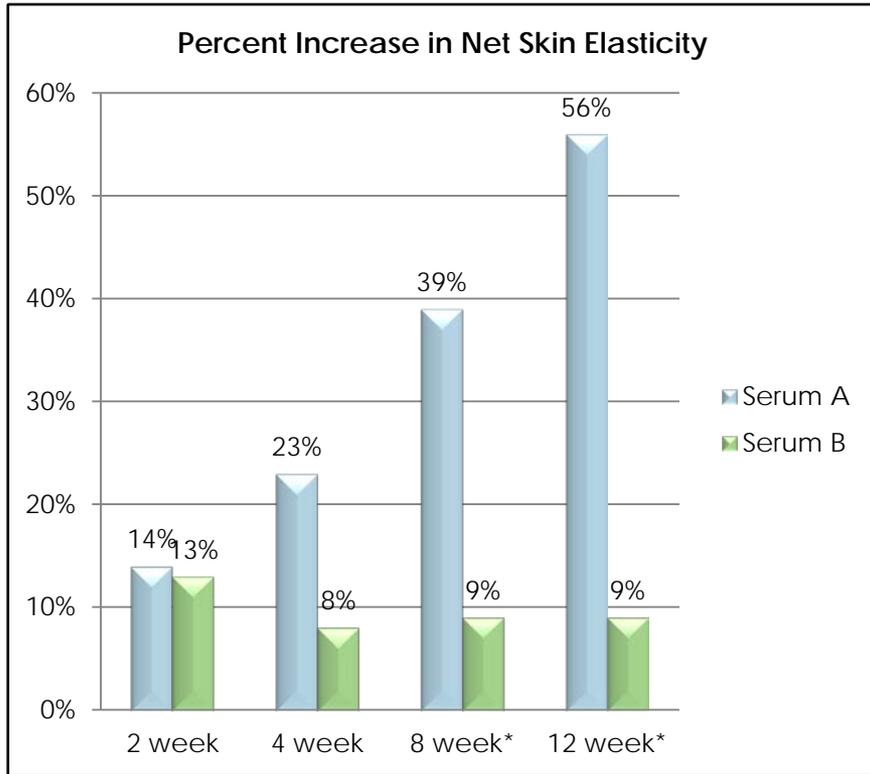


Figure 6. Graphs showing average percentage increase in biological and net skin elasticity for Serum A and Serum B sides applied with the sonic applicator.

Table 2. Comparison of measured wrinkle count reduction between Serum A and Serum B application sides.

Measurement	Eye Product	2 week minus BL	4 week minus BL	8 week minus BL	12 week minus BL
*Statistically significant improvement over baseline measurements for each eye serum					
Mean Wrinkle Count	Serum A	-2.88*	-2.37*	-2.61*	-1.90*
	Serum B	-1.51*	-1.90*	-1.92*	-1.29
p-values between treatments (Serum A vs. Serum B)					
**Statistically significant improvements in wrinkle count for Serum A side over Serum B side at the 2 week time point.					
Mean Wrinkle Count		p=0.04**	p=0.58	p=0.41	p=0.42

Wrinkle Analysis:

Comparing the Serum A and Serum B application sides, the wrinkle count was significantly reduced on Serum A side at the 2 week time point (p=0.04).

Study participants favored Serum A over Serum B results at all the time points. Overall, the majority of the participants liked the Serum A when used with the sonic applicator.

CONCLUSIONS

These studies further support the performance of the sonic applicator. While increased product absorption may be provided by sonic application, factors such as humectants, functional ingredients, etc. may all impact performance of the sonic device. Further research will be performed to identify the key factors.

REFERENCES

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2. Anthony V. Rawlings; James J. Leyden, Skin Moisturization, Second Edition, ISBN: 978-142007094-1, Copyright 2009