Methods of Assessing Cleansing Efficacy of a Sonic Skin Care Brush

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INTRODUCTION and OBJECTIVES

To assess cleansing performance between manual cleansing and speed settings [low (1), 2,3, and high (4)] of a sonic cleansing brush by utilizing surrogate models of dirty skin [Dirty Skin Surrogates (DSS): include components of long-lasting makeup, artificial sebum, “standard soil”, particulate/atmospheric pollution, and/or colorants].

RESULTS

Cleansing comparisons of sonic cleansing to manual cleansing provided repeated indication of significantly greater removal of surface debris (DSS formulations) with use of the sonic cleansing brush ($p<0.01$). While the sonic brush removed up to 100% of the toughest surface debris without altering the skin barrier, manual cleansing typically leaves multiple- fold more DSS on the skin. When using a robust DSS formulation in a cleansing comparison of the four sonic speeds, Delta L*a*b* measurements found a 76% difference in ultimate performance between the lowest and highest speeds of the sonic brush. Greater performance of speed 4 was found over speed 3 ($p=0.03$), of speed 3 over speed 2 ($p<0.01$), and of speed 2 over speed 1 ($p<0.01$).

CONCLUSIONS

The sonic skin cleansing brush systems have proven to be well received and beneficial in cleansing skin. While every speed of the sonic brush systems provides a measurably greater performance to manual cleansing, each speed provides the opportunity for further customization of the sonic brush as part an overall skin care regimen. Future studies will evaluate additional clinical performance benefits of the sonic brush.

Study I: Sonic cleansing on Sebollution

OBJECTIVE

To evaluate the cleansing efficacy/protective effect of a sonic brush vs. manual cleansing against pollution (trapped in grease/oil typical of human sebum); and therefore the efficacy at removing sebum/dirt/oil in addition to the removal of atmospheric pollution.

METHODOLOGY

"Sebollution" (SPM) consists of atmospheric particulate matter/pollution combined with grease/oils typical of human sebum. The method is a new, non-invasive, standardized method using image analysis of subject photos to quantify the amount of pollution/sebum remaining on the skin after cleansing.

Twenty subjects were enrolled in a single-center, cleansing study comparisons between speed 2 of the sonic skin cleansing brush compared to manual cleansing.

Equal amount of SPM were applied to 32 millimeter circles (1.25 inches) in the center of each cheek (left and right).

Method of cleansing (sonic vs. manual) was randomized to the side of the face (left or right) for each subject.

Each side was cleansed for five seconds using the sensitive brush head or manually, using equal amounts of water and a gel cleanser.

Photographs (VISIA CR, Canfield Imaging, NJ, USA) were taken before application of the SPM, after application of the SPM, and following cleansing. Image analysis (Image J, NIH, Bethesda, MD, USA) and color measurements (Dermaspectrometer II) were used to quantify color intensity (amount of SPM).

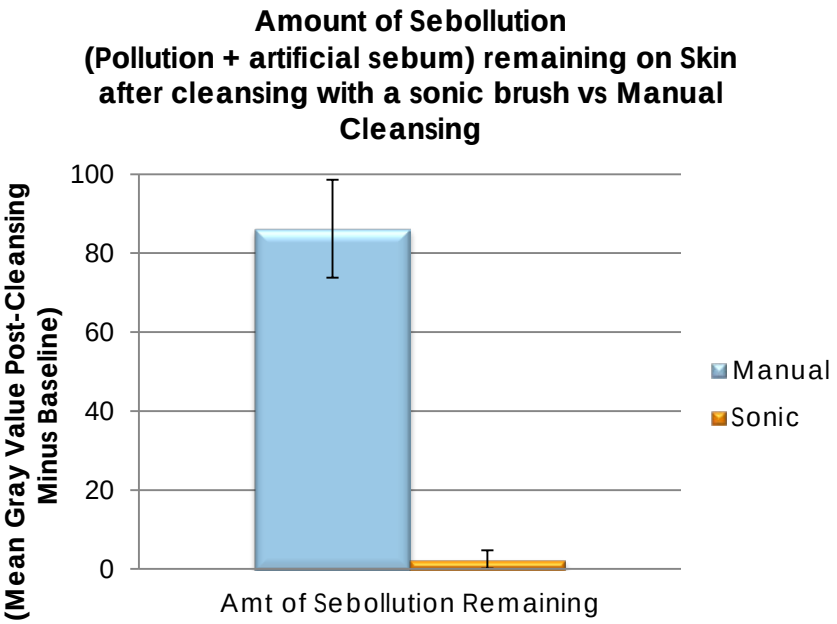
INCLUSION CRITERIA

- Women between the ages of 18-65 years;
- Color of the cheeks are visibly the same per evaluation of study examiner;
- Skin types I & II;
- Have healthy normal skin

RESULTS

Using a robust cleansing protocol to assess removal of SPM (atmospheric particulate matter trapped in grease/oil) indicates that speed 2 of the sonic brush removes 35.8 times more pollution than manual cleansing.

Figure 1. Chart comparing the amount of Sebollution (pollution/particulate matter with grease/oil) remaining following cleansing with a sonic brush (speed 2) vs. manual cleansing.



Study II: Comparison of Speeds

OBJECTIVE

To assess cleansing performance between the four speeds of a sonic brush [low (1), 2,3, and high (4)] in several split-face cleansing comparison studies.

METHODOLOGY

Long-lasting makeup and powder methodology were used in these studies. Thirty subjects were enrolled in each comparison study.

Single-center, cleansing comparison studies were performed between two speeds of the sonic skin cleansing brush in each study.

- Speed 1 (lowest) vs. speed 2
- Speed 2 vs. speed 3
- Speed 3 vs. speed 4 (highest)

Equal amounts of a long-lasting foundation and mineral powder were applied to each cheek (as a surrogate for surface debris).

Speed of the brush was randomized to the side of the face (left or right) for each subject.

Each side was cleansed for five seconds using the sensitive brush head (on the identified speed) and equal amounts of water and a gel cleanser.

Color measurements (Dermaspectrometer II) were used to quantify color in the treatment regions before makeup application, pre-cleansing, and post-cleansing.

INCLUSION CRITERIA

- Women between the ages of 18-70 years;
- Color of the cheeks are visibly the same per evaluation of study examiner;
- Skin types I & II;
- Have healthy normal skin

RESULTS

Using a robust cleansing protocol, these studies indicate that Speeds 2, 3 and 4 remove 26%, 56%, and 76% more surface debris, respectively, than the baseline sonic cleansing performance of speed 1. These results provide clear distinction between the performance of each speed to aid in customizing skincare regimens for clients or use in back-bar procedures.

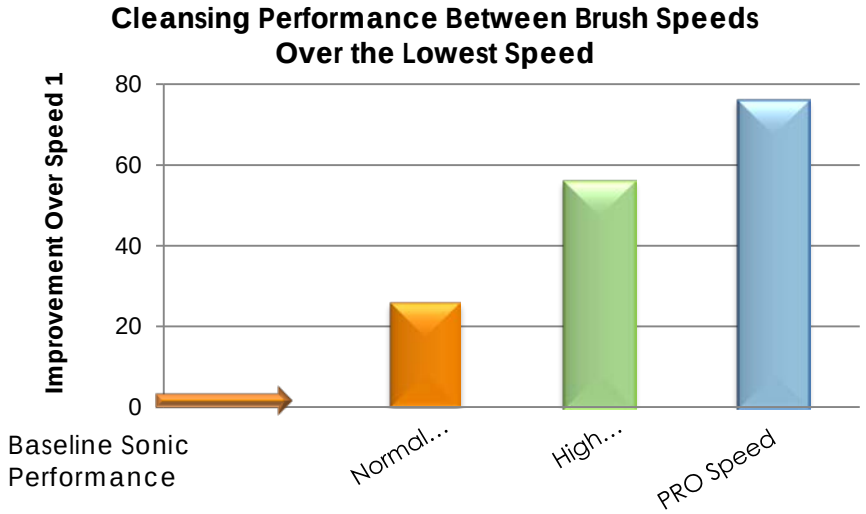


Figure 2. Chart showing the percent increase in cleansing performance of speeds 2, 3, and 4 of a sonic brush over speed 1.

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