

# A Corrective Cosmetic Improves the Quality of Life and Skin Quality of Subjects with Facial Blemishes Caused by Skin Disorders

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**Background:** Facial blemishes resulting from skin disorders have a significant effect on the patient's self-esteem and impact quality of life (QOL).

**Aim:** To assess the impact of a corrective cosmetic (CC) on QOL on top of skin quality parameters.

**Methods:** An international observational study was conducted on subjects with visible facial flaws that would benefit from a corrective cosmetic. Investigators collected data regarding demographics, QOL using the Skindex-16 scale, skin dryness and tautness, subject and investigator satisfaction, cosmetic acceptability and tolerance at baseline and after 4 to 6 weeks of daily use.

**Results:** A total of 1840 subjects participated; the mean age was 31.5±11.1 and 95% were women. Acne accounted for 48.9% of skin conditions, followed by melasma (16.7%) and rosacea (15.3%). Of the subjects 81.2% had at least 10% of the face affected and the condition was rated as disfiguring by 45.3% of the subjects; 45.0% and 44.4%, respectively, had neither taut nor dry skin at baseline. Baseline Skindex-16 scores for symptoms, emotions, functioning and overall were 1.4±1.3, 3.5±1.6, 2.4±1.8 and 2.4±1.3, respectively, on a scale from 0 to 6. Compliance was 96.0±10.6%. At the end of the study, Skindex-16 scores had significantly ( $p<0.0001$ ) improved for all parameters, as did skin dryness and tautness. Subject and investigator satisfaction were high or very high; cosmetic acceptability was high or very high and local tolerance good or very good.

**Conclusion:** The tested corrective cosmetic significantly improved the QOL of subjects with significant facial flaws, skin tautness and dryness, and was well tolerated.

**Keywords:** corrective cosmetic, dermatoses, quality of life, SKINDEX-16

## Introduction

Facial blemishes including acne, angioma, rosacea, hyperpigmentation, vitiligo and other skin disorders may cause psychological impairment.<sup>1</sup> Such impairment may have a significant impact on a patient's quality of life (QOL), on their relationships with others, self-image, and self-esteem, and may cause depression and/or emotional distress.<sup>2-5</sup> Several studies have demonstrated that corrective makeup or cosmetic camouflage results in the improvement of QOL in subjects with pigmentary disorders, in particular vitiligo, acne, scars, vascular disorders or after chemotherapy. But these studies were often conducted in small populations.<sup>6-11</sup>

Despite the proven ability of corrective cosmetics to improve QOL, patients may be discouraged to use them by their healthcare professional as they are still considered as aggravating the condition if not chosen and applied correctly.<sup>5</sup>

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The tested highly corrective cosmetic product (Dermablend<sup>®</sup>, Vichy Laboratoires, France, hereafter referred to as “CC”) is available in different formulations (3D formulation for acne, containing salicylic acid and eperuline, and stick and fluid corrector formulations for skin conditions other than acne) and shades, and is adapted for each skin type and each indication. Fluid and stick formulations contain mineral filters such as titanium dioxide and iron oxide to protect against UV and visible light.<sup>12</sup> Moreover, it does not affect the structure of the physiological function of the skin, is non-comedogenic, highly photoprotective and safe as reported by Duteil et al and in yet unpublished data.<sup>12</sup>

In 2005, CC was tested for the first time in a small study of 63 subjects with severe facial disorders including acne, dermatosis papulosis, hypopigmentation, lentigines, melasma, rosacea, vascular proliferations or other facial scars. Results after 3 months showed a significant ( $p < 0.01$ ) improvement in Skindex-16 scores.<sup>13</sup>

The aim of the present study was to confirm the improvement in QOL in a large panel of subjects with facial blemishes due to skin disorders, after a period of 4 weeks. Moreover, the study assessed subject and investigator satisfaction, cosmetic acceptability, skin quality and tolerance of the CC.

## Methodology

Between January and November 2018, a large, international, prospective, anonymous, non-interventional and observational survey assessed the impact of a CC on QOL, using the Skindex-16, as well as on skin dryness and tautness.<sup>14</sup>

The Skindex-16 is an abbreviated version of the Skindex-29 and is composed of 16 questions to which a majority of patients would have chosen the same response when responding to Skindex-29, and measurement of bother rather than frequency of patient experiences. It evaluates symptoms, emotional well-being, and functioning on a scale ranging from 0=not bothered at all to 10=very much bothered.

The survey was conducted according to the guidelines of the International Epidemiological Association for proper conduct in epidemiological research and required in Europe no ethics committee approval for this type of investigation; subjects gave written informed consent to participate in this survey.<sup>15</sup>

Adult subjects with visible facial flaws including, but not limited to, acne, rosacea, hyperpigmentation, angioma

or vitiligo and who could benefit from CC were invited to participate. At baseline, investigators proposed one of the different formulas of the CC according to their indication and instructed the subjects to apply the CC once daily on the entire face.

Demographics, QOL, skin dryness and tautness were assessed at baseline. Subject and investigator satisfaction, cosmetic acceptability, application frequency and tolerance were assessed at baseline and after 4 weeks.

Statistical analyses were conducted using SAS software (version 9.4, SAS Institute Inc., Cary, NC). Qualitative variables were described as numbers and percentages of the different response modalities. A 95% confidence intervals were calculated if necessary. Quantitative variables were described as numbers, means, standard deviations, medians, minimums, maximums and numbers of missing data. Quantitative data evolution was studied by a paired samples *t*-test or a paired samples Wilcoxon test in case of non-parametric distribution. Multinomial data evolution was studied by a generalized mixed model for multinomial data. All statistical analyses were performed at the 5% significance using 2-sided tests, except normality which was tested at the threshold of 1% using the Shapiro–Wilk test.

## Results

Overall, 1840 subjects, mainly women (95%, 1704/1793) with a mean age of  $31.5 \pm 11.1$  years participated. The acne accounted for 48.9% (900/1840) of subjects with skin conditions. The other diagnoses included 16.7% (307/1840) of subjects with melasma, 15.3% (282/1840) with rosacea, 14.8% (272/1840) with post-inflammatory hyperpigmentation and 9.7% (178/1840) with angioma; other skin conditions (such as vitiligo, hypopigmentation, etc.) impacted 5% or less of the subjects. A total of 81.2% (1489/1834) had at least 10% of the face affected, 45.3% (827/1826) considered the condition as disfiguring; 18.4% had taut and 21.2% had dry skin. Detailed demographic and skin characteristics at baseline are provided in Table 1. Baseline Skindex-16 scores for symptoms, emotions, functioning and globally were  $1.4 \pm 1.3$ ,  $3.5 \pm 1.6$ ,  $2.4 \pm 1.8$  and  $2.4 \pm 1.3$ , respectively (Table 2). One subject aged 12 years accounted for demographic data analysis but was excluded from the benefit analysis. This subject was considered a protocol violator.

Overall, 81.6% (1446/1773) applied the CC once daily after 4 weeks, Skindex-16 scores had significantly ( $p < 0.0001$ ) improved by 0.7, 1.8, 1.4 and 1.3 points for symptoms, emotions, functioning and globally, respectively (Figure 1). The prevalence of subjects with skin tautness had decreased by

**Table 1** Demographic and Skin Characteristics at Baseline

Parameters	Values
<b>Gender (n, %)</b>	N=1793
Male	89 (5.0%)
Female	1704 (95.0%)
<b>Age (years)</b>	N=1811
Mean±SD	31.5±11.1
Min;Max	12.0;78.0
Median	30.0
<b>Age distribution (n, %)</b>	N=1811
< 20 years	254 (14.0%)
20–29	641 (35.4%)
30–39	500 (27.6%)
≥40	416 (23.0%)
<b>Skin condition (n, %)*</b>	N=1840
Acne	900 (48.9%)
Rosacea	282 (15.3%)
Other inflammatory skin diseases	32 (1.7%)
Vitiligo	97 (5.3%)
Other hypopigmentation	93 (5.1%)
Melasma	307 (16.7%)
Post-inflammatory hyperpigmentation	272 (14.8%)
Other hyperpigmentation	104 (5.7%)
Angioma	178 (9.7%)
Scars	223 (12.1%)
Other skin conditions	46 (2.5%)
<b>Surface of face affected (n, %)</b>	N=1834
<10%	344 (18.8%)
10–29%	724 (39.5%)
30–49%	565 (30.8%)
50–80%	167 (9.1%)
>80%	34 (1.9%)
<b>Intensity (n, %)</b>	N=1826
Minor flaw	999 (54.7%)
Disfiguring flaw	670 (36.7%)
Very disfiguring flaw	144 (7.9%)
Extremely disfiguring flaw	13 (0.7%)
<b>Taut skin (n, %)</b>	N=1836
Not at all	826 (45.0%)
Not much	672 (36.6%)
Yes	301 (16.4%)
Yes, very taut	37 (2.0%)
<b>Dry skin (n, %)</b>	N=1833
Not at all	814 (44.4%)
Not much	631 (34.4%)
Yes	347 (18.9%)
Yes, very dry	41 (2.2%)

**Note:** \*More than one skin condition possible by subject.

**Table 2** Skindex-16 Scores at Baseline\*

Skindex-16 score	Values
<b>Symptoms</b>	N=1836
Mean±SD	1.4±1.3
Min;Max	0.0;6.0
Median	1.0
<b>Emotions</b>	N=1833
Mean±SD	3.5±1.6
Min;Max	0.0;6.0
Median	3.7
<b>Functioning</b>	N=1831
Mean±SD	2.4±1.8
Min;Max	0.0;6.0
Median	2.0
<b>Global Score</b>	N=1831
Mean±SD	2.4±1.3
Min;Max	0.0;6.0
Median	2.4

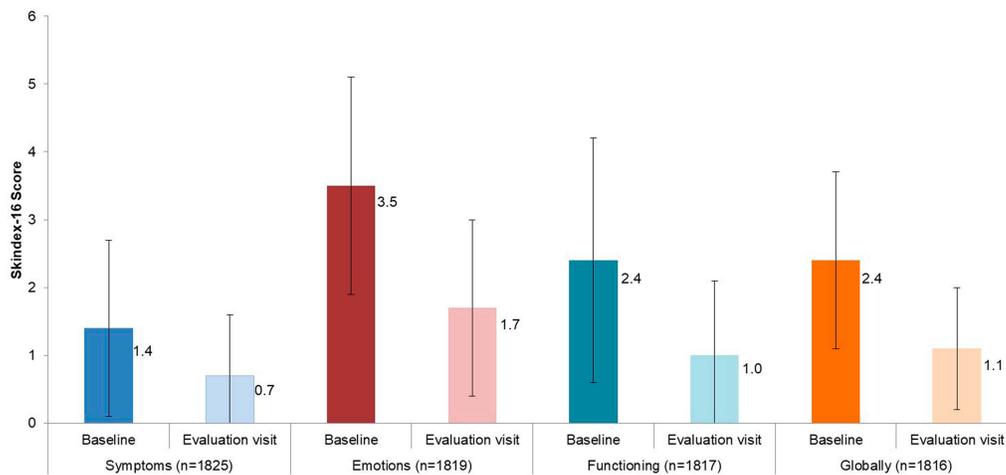
**Note:** \*Scores ranging from 0=not bothered to 10=very much bothered.

14.8% to 3.6% and by 16.5% to 4.7% for those with dry skin (Figure 2); differences were statistically significant ( $p<0.0001$ ). Subject satisfaction was  $8.8\pm 1.4$  on an 11-point scale; 98.7% (161/163) of the investigators were satisfied or highly satisfied with the CC. According to the latter, CC had a satisfying or very satisfying impact on the well-being of subjects with acne (95.8%, 159/166), rosacea (95.7%, 132/138), hypopigmentation (95.1%, 117/123), hyperpigmentation (94.1%, 144/153) and angioma (88.9%, 80/90). In total, 95.0% (1741/1835) of all subjects were satisfied or highly satisfied with the cosmetic quality of the tested CC and 96.0% (1761/1835) stated that the CC had met their expectations.

Local tolerance was excellent in 97.7% of all subjects.

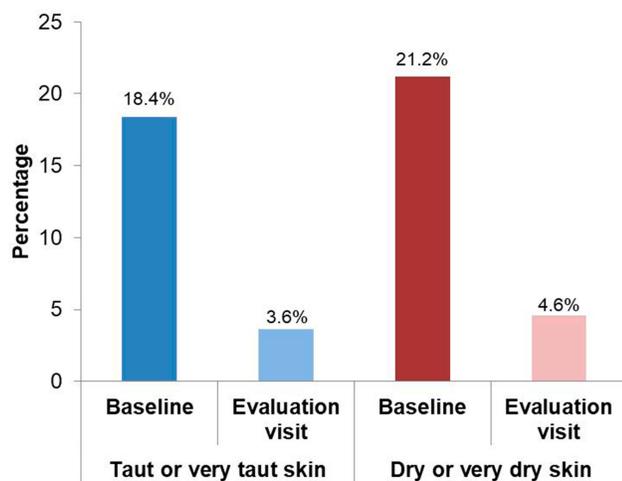
## Discussion

Results from our study confirmed in a large cohort of subjects with facial blemishes caused by skin disorders that the tested CC significantly ( $p<0.0001$ ) improved QOL for symptoms, emotions, functioning and globally with greater improvements in emotions and functioning probably explained by the conditions treated. Moreover, the CC hydrated the skin and reduced skin tautness. Subject and investigator satisfaction after 4 weeks of use was very high and subjects highly appreciated the cosmetic quality of their CC.



**Figure 1** Skindex-16 score at baseline and after 4 weeks of daily application on the face.

**Notes:** Skindex-16 score: 0=not bothered at all, 10= always bothered. Changes from Baseline were all statistically significant ( $p<0.0001$ ).



**Figure 2** Prevalence of subjects with dry or very dry and with taut or very taut facial skin at baseline and after 4 weeks of daily application.

**Note:** A significant ( $p<0.0001$ ) decrease in the prevalence of subjects with dry and taut facial skin was observed after 4 weeks of use.

Specific corrective cosmetics and camouflage makeup are becoming more and more popular in the adjuvant care of facial blemishes resulting from primary (acne rosacea vitiligo, melasma) or secondary skin disorders (post-inflammatory hyperpigmentation, blemishes and disorders resulting from adverse reactions or side effects from therapies such as cancer or aesthetic surgery, scars) as they have been shown to improve skin aspect as well as QOL and self-esteem.<sup>16-22</sup>

However, certain products have only been developed to be specific to a particular type of facial blemish and to different skin phototypes.<sup>8,18,22</sup> The tested highly corrective CC has been developed to suit all types of facial blemish and different skin phototypes. Moreover, it can be used in women, men and

children, due to its excellent local tolerance. And it has shown to have a very high protection against visible light, now well recognized to induce or worsen pigmentation disorders.<sup>12</sup>

Despite these advantages, and even though camouflage make-up and corrective cosmetics are indicated for any gender and any age, our survey shows that a large majority of CC users are young women.<sup>23</sup> This may be due to the fact that women care much more about physical aspects and may use makeup more easily than men. Regardless of this potential limitation, our data confirm the significant positive impact of the tested CC on the QOL of subjects with significant facial blemishes.

In conclusion, dermatologists should continue encouraging their patients regardless of gender or age with disfiguring dermatoses to use corrective cosmetics, thus improving skin appearance, well-being and their QOL.

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## Disclosure

Delphine Kerob is an employee of Laboratoires Vichy, France. Catherine Delva is an employee of Sylia-Stat. The authors report no other conflicts of interest in this work.

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