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Long-Term Safety and Efficacy of Hybrid Cooperative Complexes of High- and Low-Molecular Weight Hyaluronic Acid to Improve Skin Laxity of the Inner Upper Arms: A Single-Arm Study

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In a single-center study conducted over a 12-month study period, we investigated the long-term safety and efficacy of Profilo Body® (IBSA Farmaceutici Italia Srl, Lodi, Italy) for treating upper inner arm skin laxity. The study participants included women (37–65 years) with at least initial signs of skin laxity and roughness on their upper arms. The treatment consisted of two injections of Profhilo Body® one month apart, followed by five injections two months apart, and a follow-up evaluation one month later. We assessed the study participants using the IBSA Photographic Scale for Assessment of Upper Inner Arm Skin Laxity. At the end of the study, the participants also completed a self-evaluation questionnaire related to product efficacy and tolerability. A total of 34 enrolled participants received the first three injections. A total of 32 participants received the next four injections. We found that slight ecchymosis occurred in 36 participants. The results of the study showed a significant decrease in median IBSA Photographic Scale for Assessment of Upper Inner Arm Skin Laxity scores at Month 3 compared with baseline scores ($p < .0001$). This decrease was maintained through Month 12. At least 50% of the participants experienced a moderate improvement in skin firmness, smoothness, brightness, hydration, and overall inner arm appearance that continued through Month 12. The participants self-evaluated tolerability of the product as "optimal." Based on the results of this study, we conclude that long-term use of Profhilo® Body is safe and effective for reducing skin laxity of the upper inner arms.

Skin laxity is described as the progressive loss of skin elasticity, loosening of connective tissue framework, and deepening of the skin folds (Woolery-Lloyd & Kammer, 2011). Factors that contribute to sagging skin and loss of skin elasticity include aging, low protein diets, rapid weight loss, low body mass index, liposuction,

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The author confirms that the data supporting the findings of this study are available within the article. Further data can be provided upon reasonable request.

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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pregnancy, stretch marks, and smoking. Because women have a thinner dermis than men, skin flaccidity can affect women more than men. Additionally, the *fibrous septa* (i.e., thin, cord-like bands of connective tissue that extend from the skin to the underlying muscle or fascia) in the hypodermis are smaller in men and arranged in oblique planes with small fat lobules. In addition to being larger in women, these lobules have a parallel arrangement, which offers less resistance to stretching (da Cunha et al., 2022).

During the transitional phase in a woman's life when reproductive ability declines, there is a decrease in serum estrogen levels that contributes to greater skin *extensibility* (i.e., the maximum distance the skin can be stretched before reaching its limit) and loss of *elasticity* (i.e., the ability of the skin to return to its original shape after being stretched) (da Cunha et al., 2022). Although the demand for aesthetic procedures is increasing, only a limited number of these procedures effectively improve the appearance of sagging skin (da Cunha et al., 2022; Haddad et al., 2019).

Nonsurgical treatments for reducing body skin laxity include high-intensity focused electromagnetic fields, radiofrequency, targeted pressure energy (Duncan & Busso, 2023), laser-assisted technology (Park et al., 2021), micro-focused ultrasound therapy (Khan & Khalid, 2021), injectable poly-L-lactic acid (Christen, 2022; Haddad et al., 2019), calcium hydroxyapatite (Goldie et al., 2018), and/or hyaluronic acid (HA) (Alam et al., 2006).

HA-based dermal fillers have become the most popular treatment for soft tissue contouring or volumizing; however, limitations of these products include the use of chemical cross-linking reagents during their production and their maximum concentration of 25 mg/mL (Humzah et al., 2024).

Early-onset adverse events (i.e., occurring within 72 hours) associated with HA dermal fillers include injection site reactions, displacements (e.g., lumps), hypersensitivity reactions, early acute infections, the *Tyndall effect* (i.e., a visible bluish discoloration of the skin that occurs when a filler is injected too superficially), and thromboembolism (Cassuto et al., 2020).

Late-onset adverse events associated with HA dermal fillers include late-occurring infections, inflammatory nodules/granulomas, noninflammatory nodules, altered pigmentation, and scarring. The clinical application of HA-based fillers is also limited by variations in hydrogen bond formation that affect the rheological behavior of HA-based hydrogels causing reduced viscosity over time based on HA molecular weight and concentration (Cassuto et al., 2020).

Stable *hybrid cooperative complexes* (HCCs; i.e., combinations of high and low molecular weight hyaluronic acid [H-HA, L-HA] molecules that are stabilized together through a thermal process), such as those used in Profhilo® (IBSA Farmaceutici Italia Srl, Lodi, Italy) for the face and neck, and Profhilo® Body (IBSA Farmaceutici Italia Srl, Lodi, Italy) for the brachial and abdominal areas, overcome these limitations because of their unique rheological parameters and consistently low viscosity over time (Humzah et al., 2024). The HCCs are produced using a thermal process without chemical modification known as nano hybrid complex (NAHYCO®) technology. Other unique characteristics of these products include a high HA concentration (64 mg/2 mL), ideal manageability, optimal tissue diffusion, and a tan delta >1, which provides greater flowability versus elasticity. (Cassuto et al., 2020).

According to the instructions for use of Profilo® Body (IBSA Farmaceutici Italia Srl, 2020), aesthetic professionals should administer the product in two sessions, one month apart, followed by maintenance sessions, two months apart, as needed. Sparavigna et al. (2022a) demonstrated the long-term efficacy and safety of Profhilo® in a study where the participants received the product in two treatment sessions followed by five sessions, two months apart over a one-year period. In two additional clinical sessions, Sparavigna et al. (2022b), (2023) demonstrated the efficacy and safety of Profhilo Body® to treat the inner arms, abdomen, and knees. This study aims to investigate the long-term safety and efficacy of Profhilo Body® to reduce skin laxity of the inner arms when administered over a 12-month period.

METHODS

We conducted the study in accordance with the guidelines of the Declaration of Helsinki, as revised in 2024 (World Medical Association, 2024). The study was approved by the Local Ethics Committee at DERMING Srl, Milan, Italy (Study Code E1423). We obtained informed consent from all study participants before enrolling them in the study.

Participants and Eligibility Criteria

Eligible participants for the study included nonpregnant adult women, 35–65 years, with at least initial signs of skin laxity and roughness on their upper inner arms who were seeking treatment for skin laxity of their upper inner arms in the clinic.

We excluded women who were breastfeeding, not using contraception, using other aesthetic treatments/procedures (e.g., biomaterial implants, surgical procedures, botox injections, lasers, or chemical peeling) in the treatment areas 12 months before the start of the study or during the study. We also excluded participants if they were sensitive to Profhilo® Body or its ingredients, had taken part in a similar study three months before the start of the current study, or used permanent fillers in the past. All study participants agreed not to change their diet, to maintain their usual level of physical activity, to continue their typical use of cosmetic/cleansing products, and not to expose themselves to strong ultraviolet radiation without adequate sun protection during the 12-month study period.

Study Design

As shown in Figure 1, eligible participants in this prospective, single-center, single-arm, nonblinded, open-label study received seven treatments of Profhilo® Body (two injections, one month apart, followed by five injections, two months apart) for the treatment of skin laxity of their upper inner arms. The participants attended a follow-up visit one month after the last injection (i.e., 12 months after the first treatment session).

In each of the seven treatment sessions, one investigator administered the Profhilo® Body to the participants in each of their upper inner arms using the *Bio Aesthetic Point* (BAP) injection technique. The recommended BAP technique for injecting Profhilo® Body varies according to the anatomical location being treated. For brachial areas, the manufacturer's instructions for use recommend identifying 10 points on three different horizontal levels with 3 points on the top layer, 4 on the middle layer, and 3 on the bottom layer of each arm. To minimize the risk associated with the injection procedure and to maximize the spread of Profhilo® Body, the identified points should be sites with no large blood vessels or nerve branches (IBSA Farmaceutici Italia Srl, 2020). Using a bolus technique, the physicians injected 0.3 mL into each of 10 points into the deep dermis or subcutaneous layer for a total dose of 3 mL in each arm per treatment session. After administering each injection, the physicians applied a light massage to each site.

Study Outcomes

The primary endpoint of the study was the proportion of study participants who experienced adverse events after seven treatment sessions with Profhilo® Body during the 12-month study period. We categorized side effects as being *Adverse Device Events, Serious Adverse Device Events*, *Adverse Events*, and *Serious Adverse Events*, as well as *Expected Adverse Events* (i.e., light bruises or small bumps) or *Unexpected Adverse Events*.

Secondary endpoints were the proportion of study participants with an improvement of ≥ 1 Grade which the physicians determined using the IBSA Photographic Scale for Assessment of Upper Inner Arm Skin Laxity (Cassuto et al., 2021) as well as the participants' response to a self-evaluation questionnaire related to product efficacy and tolerability.

The IBSA Photographic Scale for Assessment of Upper Inner Arm Skin Laxity is a validated tool that can be used to evaluate upper arm skin laxity (Cassuto et al., 2021). The scale was developed using digital techniques and real photographs. It consists of five grades. Grade 1 represents *normal* responses of the tissues of the upper inner arm. Grades 2, 3, 4, and 5 describe *mild, moderate, moderate-to-severe*, and *severe skin laxity* of the tissues of the upper inner arm, respectively. The physicians also assessed safety outcomes and skin laxity at each time-point throughout the study.

At the end of the 12-month study period, the participants completed a self-evaluation questionnaire to assess the level of improvement in their appearance, the quality of the skin of their upper inner arms following treatment with Profhilo® Body, and their tolerability of the product.

Sample Size

We estimated the *target sample size* (i.e., the minimum number of participants for study enrollment) based on the expected incidence of adverse events over the 12-month study duration. We based this estimate on a previous clinical study that investigated the long-term safety and efficacy of seven injections of Profhilo®, for treating the face and neck (Sparavigna et al., 2022a). In that study, approximately 20% of the participants experienced no injection-related or expected adverse events. Therefore, the probability that one or more adverse events would not occur in a sample of 25 participants is 5%. Assuming a 95% power of the investigation (i.e., a 95% probability that the observed difference is not due to chance) and accounting for a possible dropout proportion of 25%, we determined the sample size required to assess the proportion of participants experiencing adverse events to be 34.

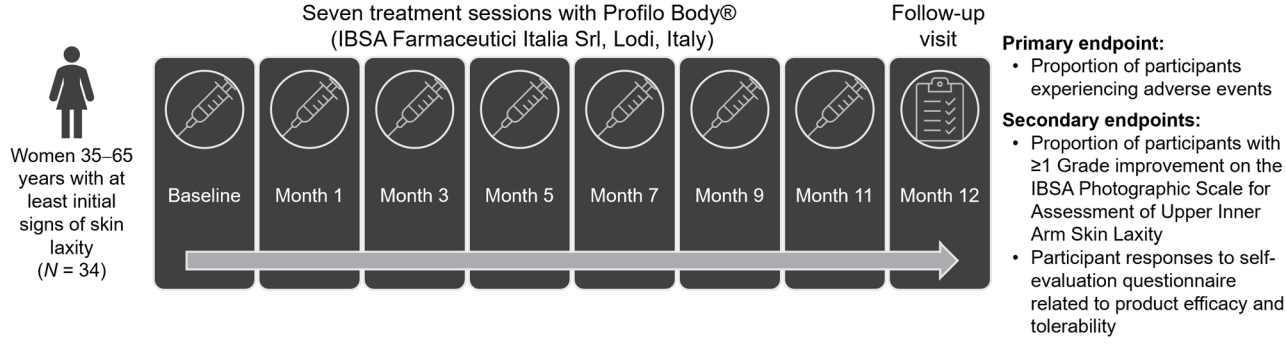

FIGURE 1. Study design.

We included participants who received one or more injection in the safety analysis and participants who had seven injections of the product and completed the study in the efficacy analysis.

Statistical Analysis

We presented categorical variables as absolute and relative frequencies and continuous variables as mean values, standard deviations (SD), median values, and interquartile ranges. We used GraphPad Prism, version 10.2.1 (GraphPad Software, San Diego, CA, USA) to perform the statistical analysis. Since the skin laxity data gathered in the study primarily showed a non-normal distribution when using normality and lognormality tests (e.g., Anderson–Darling test, Shapiro–Wilk test, Kolmogorov–Smirnov test), we used nonparametric statistical tests to determine statistical differences between the study timepoints.

We used the Friedman test to evaluate whether there was a statistical difference between repeated skin laxity measures (i.e., the IBSA Photographic Scale scores for Assessment of Upper Inner Arm Skin Laxity) recorded at all timepoints. We carried out a post hoc analysis to assess whether there was a statistical difference between skin laxity measures at baseline and any specific subsequent timepoint using the Wilcoxon signed rank test with a two-tailed p-value. In the post hoc analyses, we applied a Bonferroni correction to account for making multiple (i.e., 7) comparisons, resulting in a significance level for these analyses of $p \leq .007$ (i.e., $p \leq .05$ divided by 7).

RESULTS

Participant Demographics and Baseline Characteristics

We enrolled 34 White women with mild-to-moderate skin laxity on their upper inner arms (i.e., Grades 2–4 on the IBSA Photographic Scale for Assessment of the Upper Inner Arms) in the study. The study participants had a median age of 55 (range, 37–65 years) and a median body mass index of 22.5 (range, 21.0–23.5 kg/m^2).

Safety Outcomes

As shown in Table 1, a total of 34 participants received the first three of seven treatments with Profhilo® Body. Two participants subsequently withdrew from the study; therefore, 32 participants received the remaining four treatments. During the 12-month study period, we recorded a total of 36 adverse events (i.e., slight ecchymosis) occurring in 460 injections. There were no serious adverse device events or adverse events.

Skin Laxity of the Upper Inner Arms

Efficacy data were available for 32 participants who received seven treatments of the upper inner arms with Profhilo® Body. These treatments led to a decrease in mean IBSA Photographic Scale for Assessment of Upper Inner Arm Skin Laxity scores (Figure 2 and Table 2). The decrease in median IBSA Photographic Scale for Assessment of Upper Inner Arm Skin Laxity scores over time was significant (Friedman's test, $p < .0001$). In addition, the Friedman test result (183.9) was large, providing strong evidence against accepting the null hypothesis, which assumes no difference between the groups.

Further, a *post hoc analysis* (i.e., a statistical analysis conducted after data collection in a study) revealed that the median decrease in the IBSA Photographic Scale for Assessment of Upper Inner Arm Skin Laxity scores was significant at each subsequently measured timepoint, with a significant 50% reduction in the median score (i.e., from Grade 2 to Grade 1) at Month 3 versus baseline that was maintained until Month 12 ($p < .0001$; Table 2). The Wilcoxon signed rank test values were large (–435 at Month 3 compared with baseline and –528 at Months 5–12 compared with baseline), supporting the conclusion of a significant difference between these timepoints, with lower skin laxity scores at Months 3–12 compared with

TABLE 1 Adverse Events Following 460 Injections[a]

	n	Adverse events (%)
Adverse events	36	7.8
Expected adverse events[b]	36	7.8
Unexpected adverse events	0	0
Serious adverse events	0	0
Adverse device events	0	0
Serious adverse device events	0	0

[a]A total of 34 patients received the first 3 treatments (i.e., one 3 mL syringe and 10 injection points in each arm) and 32 participants received the remaining 4 treatments (i.e., one 3 mL syringe and 10 injection points in each arm).

[b]Slight ecchymosis.

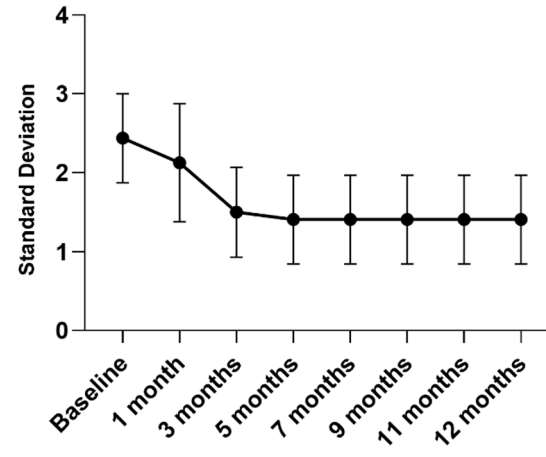

FIGURE 2. IBSA Photographic Scale for assessment of upper inner arm skin laxity: standard deviations for the 12-month study period.

TABLE 2 IBSA Photographic Scale Scores for Assessment of Upper Inner Arm Skin Laxity (*N* = 32)

	Baseline	Month 1	Month 3	Month 5	Month 7	Month 9	Month 11	Month 12
Mean (SD)	2.44 (0.56)	2.13 (0.75)	1.50 (0.57)	1.41 (0.56)	1.41 (0.56)	1.41 (0.56)	1.41 (0.56)	1.41 (0.56)
Range	2.00-4.00	1.00-4.00	1.00-3.00	1.00-3.00	1.00-3.00	1.00-3.00	1.00-3.00	1.00-3.00
Median	2. 00	2. 00	1.00	1.00	1.00	1.00	1.00	1.00
Interquartile range	(2.00-3.00)	(2.00-3.00)	(1.00-2.00)	(1.00-2.00)	(1.00-2.00)	(1.00-2.00)	(1.00-2.00)	(1.00-2.00)
Friedman test[a]	**Friedman test**				***p*-value[c]**			
	183.9				<.001			
Wilcoxon signed-rank test[b]	**W statistic (sum of signed ranks)**				**Median of differences (97.99% CI)**		***p*-value[d]**	
Month 1 *vs* Baseline	–55.00				0.00 (–1.00, 0.00)		.002	
Month 3 *vs* Baseline	–435.0				–1.00 (–1.00, –1.00)		<.0001	
Month 5 *vs* Baseline	–528.0				–1.00 (–1.00, –1.00)		<.0001	
Month 7 *vs* Baseline	–528.0				–1.00 (–1.00, –1.00)		<.0001	
Month 9 *vs* Baseline	–528.0				–1.00 (–1.00, –1.00)		<.0001	
Month 11 *vs* Baseline	–528.0				–1.00 (–1.00, –1.00)		<.0001	
Month 12 *vs* Baseline	–528.0				–1.00 (–1.00, –1.00)		<.0001	

[a]Assesses whether there are significant differences in IBSA Photographic Scale for the Assessment of the Upper Inner Arm Skin Laxity scores between the timepoints.

[b]Calculated using the Wilcoxon signed rank test and a two-tailed *p*-value, and by applying Bonferroni correction for multiple comparison (.05/7).

[c]This is an approximate *p*-value (as calculated by statistical software used in this study).

[d]These are exact *p*-values. All *p*-values were found to be significant (≤.05 for the Friedman test and ≤.00714 for the Wilcoxon signed-rank test).

The software used for the statistical analyses did not compute an effect size for the statistical tests performed in this study.

baseline. The median difference between Months 3–12 compared with baseline was –1.00, indicating that Skin Laxity scores at Months 3 to 12 were (on average) lower by 1 unit (compared with baseline). In addition, there was no difference in the confidence intervals between Months 3 and 12 compared with baseline, demonstrating 97.99% confidence that the median difference between the timepoints is exactly –1.00.

Participant Evaluation

As shown in Figure 3, the participants completed a self-evaluation questionnaire at Month 12. All participants rated their tolerability to the product as *optimal* At Month 12, at least 50% of the participants determined that they had a *moderate improvement* in skin firmness, smoothness, brightness, and hydration, and almost 60% agreed they had a *moderate improvement* in the overall appearance of their upper inner arms on a scale of *no improvement* to *optimal improvement*.

DISCUSSION

In this single-center study involving seven injections of Profhilo® Body (i.e., two injections one month apart followed by five injections two months apart over a 12-month period), we enrolled 34 women (37–65 years) with mild-to-moderate skin laxity on their upper inner arms. A total of 34 participants received the first three of seven treatments with Profhilo® Body. Two participants subsequently withdrew from the study; therefore, 32 participants received the remaining four treatments. During the 12-month study period, we recorded a total of 36 adverse events (i.e., slight ecchymosis) occurring in 460 injections.

There were no serious *Adverse Device Events* or *Adverse Events*, indicating the product has an excellent safety profile. This was supported by a self-evaluation questionnaire completed by the participants at Month 12, where all participants rated their tolerability to the product as *optimal* Treatment with Profhilo® Body in 32 participants also resulted in a significant median 50% reduction in median IBSA Photographic Scale scores for Assessment of the Upper Inner Arm Skin Laxity scores (from Grade 2 to Grade 1) at Month 3 that was maintained until Month 12 ($p < .0001$) compared with baseline scores. The efficacy of the product was also supported by a self-evaluation questionnaire at Month 12, where at least 50% of the participants concluded they had a *moderate improvement* in skin firmness, smoothness, brightness,

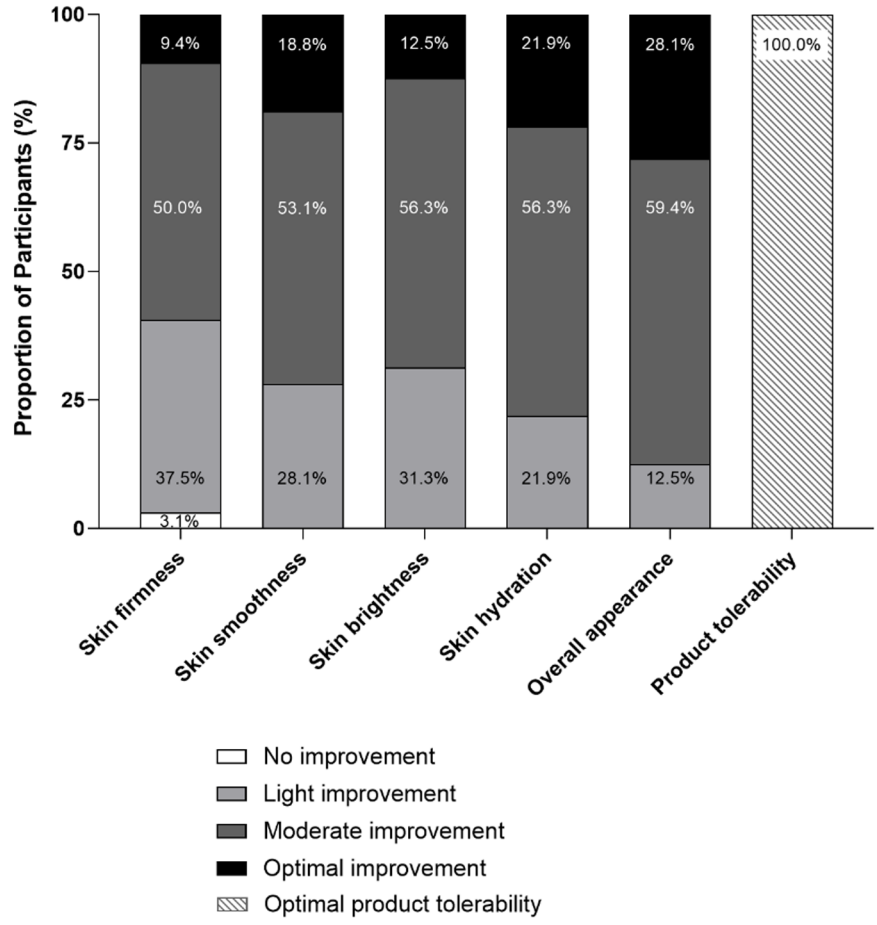

FIGURE 3. Participant responses to self-evaluation questionnaire following treatment with Profhilo Body® at the conclusion of the 12-month study period.

and hydration, and almost 60% agreed they had a *moderate improvement* in the overall appearance of their upper inner arms.

Although this was the first study to investigate the long-term safety and efficacy of Profhilo® Body for reducing skin laxity of the upper inner arms, the results of this investigation were not surprising based on a previous study (Sparavigna et al., 2022a) investigating the long-term use of Profhilo® for application to the face and neck that also confirmed the safety and efficacy of seven facial treatments administered over 12 months. In that study, 23 White women (50–73 years) experienced no *Serious* or *Unexpected Adverse Events*. Most participants (65.2%) experienced *Expected Adverse Events* (e.g., mild ecchymosis lasting 5-7 days). Some participants (17.4%) experienced minor swelling at the injection sites lasting 7–10 days, and 17.4% of the participants did not have any adverse events. (Sparavigna et al., 2022a) evaluated the efficacy of the product using the Wrinkle Severity Rating Scale (WSRS; Day et al., 2004) and Facial Volume Loss Scale (FVLS; Lorenc et al., 2012). Treatments with Profilo® led to an improvement of at least one Grade in all participants from Month 5 for the WSRS and from Month 3 for the FVLS . Notably, the improvement in mean WSRS scores occurred irrespective of the mean WSRS scores at baseline.

In a prior single-center study to evaluate the efficacy and safety of Profhilo® Body that included 22 women (47–65 years) with roughness in their abdomen and upper inner arms, Sparavigna et al. (2022b) administered two treatments in each participant's abdomen and upper inner arms. The researchers administered the first treatment at baseline and the second treatment four weeks later. They conducted a follow-up evaluation 12 weeks after the second treatment. Some participants in that study (exact proportion not reported) experienced minor adverse events post-treatment (e.g., slight bruising at the injection site) that resolved within two weeks. The researchers found that, compared with baseline, there was a significant improvement in mean IBSA Photographic Scale for Assessment of the Upper Inner Arm Skin Laxity scores at both Week 4 ($p < .05$) and Week 16 ($p < .05$). Furthermore, at Week 4, 45% of the participants had experienced improvement of at least one Grade in their IBSA Photographic Scale for Assessment of the Upper Inner Arm Skin Laxity scores

and at Week 16, 86% of the participants had experienced improvement of at least one Grade in their IBSA Photographic Scale for Assessment of the Upper Inner Arm Skin Laxity scores. Additionally, there was a significant decrease in the participant's plastoelasticity parameters (Uf [maximum elasticity] on Week 4 [$p < .05$] and Ur [elastic recovery] on Weeks 4 and 16 [$p < .05$ for both]) and skin density parameters (Ra [average roughness] on Weeks 4 and 16 [$p < .05$ for both timepoints] and Rt [total height] on Week 16 [$p < .05$]), for the upper inner arms compared with baseline. The treatment also led to a significant improvement in superficial skin hydration at Weeks 4 and 16 ($p < .05$ for both) and deep skin hydration (at a skin level of 0.5 mm at 1.5 mm) at Week 4 ($p < .05$) compared with baseline.

In another single-center study that included 50 women (35–65 years) with mild-to-moderate skin roughness and laxity on their upper inner arms, abdomen, and knees, and Grade 3–4 skin laxity. The participants underwent treatment with Profhilo® Body in their inner arms, abdomen, and knees. Treatment in that study resulted in slight bruising at the injection site in some participants (exact proportion not reported) that resolved within a few days. The investigators judged the product tolerability to be *good* or *excellent*. On Weeks 4 and 16, there was a significant decrease in the mean IBSA Photographic Scale for Assessment of the Upper Inner Arm Skin Laxity scores ($p < .05$ for both timepoints), and after treatment, most participants had an improvement of at least one Grade compared with baseline. Moreover, the treatment led to a significant decrease in skin roughness and maximum depth at Weeks 4 and 16 ($p < .05$) for the upper inner arms, and a significant increase in deep skin hydration at Weeks 4 and 16 ($p < .05$) at the 0.5 mm level and at Week 16 ($p < .05$) at the 1.5 mm level compared with baseline (Sparavigna et al., 2023).

Although many clinical trials have investigated the safety of aesthetic injectables (which are often considered to be low risk), rare and severe adverse events, including blindness and stroke, have been reported (Nikolis et al., 2024). However, alongside clinical trial data, pharmacovigilance and postmarketing safety surveillance are important for monitoring the safety of medicines and medical devices (Hamid et al., 2022). Over time, there has been an increase in scientific publications reporting on complications associated with HA injections (Nikolis et al., 2024).

In a review of the Manufacturer and User Facility Device Experience (MAUDE) database in the United States that evaluated postmarketing data for delayed adverse events occurring 14 or more days after treatment with HA fillers approved by the Food and Drug Administration between 2016 and 2020, the authors found that 33.3% of 585 reports included delayed adverse events of interest. These delayed adverse events included inflammatory (n = 82; 42.1%) and noninflammatory nodules (n = 58; 29.7%), hypersensitivity reactions (n = 42; 21.5%), and granulomas (n = 13; 6.7%) (Cohen et al., 2022; Nikolis et al., 2024). Notably, the MAUDE database is a surveillance system that relies on voluntary reporting of adverse events; thus, it is likely that adverse events in this database are underreported (Cohen et al., 2022).

In an international Safety Task Force comprising 16 experts from nine countries, each with expertise related to aesthetic injectables, most experts agreed that a global database to monitor adverse events associated with aesthetic injectables was necessary. The Safety Task Force also agreed that an organized effort is required to appropriately deal with complications related to HA injectables, such as managing vascular adverse events and hyaluronidase protocols (Nikolis et al., 2024).

Postmarketing surveillance global data for Profhilo® has shown that this product has an excellent tolerability profile. Although these data also relied on spontaneous adverse events reporting by healthcare professionals, only 12 nonserious adverse events were recorded over a three-year period, and these were mainly early-onset injection site reactions. Moreover, late-onset local reactions (e.g., swelling, nodules) only occurred in two participants in that surveillance study (Cassuto et al., 2020).

The efficacy of Profilo® Body is likely due to its mechanism of action. Through a bioremodeling action, HCCs of H-HA and L-HA facilitate extracellular matrix homeostasis, which sustains the vitality of different cell types including fibroblasts, keratinocytes, adipocytes, and myocytes, and thereby reverses skin laxity (Humzah et al., 2024). However, despite the advantages of HCCs of H-HA and L-HA, as highlighted in our current and prior studies, to optimize treatment results, aesthetic professionals must select patients appropriately for this treatment. Selected patients should have clear signs of skin laxity and roughness and no or few muscle or adipose tissue ptosis in target treatment areas (Sparavigna et al., 2023). Aesthetic professionals should provide treatments that improve patient well-being while prioritizing patient safety and respecting the aesthetic harmony of the patient and should deliver these procedures while maintaining patient confidentiality (da Prato et al., 2024).

The limitations of our study include that it is a nonrandomized, single-center study with no control arm, and involved a small number of participants who were also all of the same ethnicity and gender. In addition, we performed a limited number of assessments post-treatment. Future studies should include a large sample size of participants (including men) from different ethnicities at multiple investigator sites, using additional post-treatment assessment tools, such as validated instruments that can be used to assess skin elasticity, density, and hydration. Overall, our study highlights the safety and efficacy of Profhilo® Body to improve skin laxity of the upper inner arms.

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