

Effectiveness and Tolerability of a Novel Large Molecule, Injectable-Grade Hyaluronic Acid Cream in Subjects with Moderate Photoaging

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INTRODUCTION

- The moisture-binding properties of hyaluronic acid (HA) in improving skin hydration are widely recognized.¹
- Applied topically, HA is an excellent hydrator. However, the large size of the HA molecule presents challenges in delivery through the skin for maximal efficacy.^{2,3}
- Patented InterFuse™ technology uses an advanced formulation process and delivery system that promotes efficient percutaneous transport of large molecules, enabling delivery of potent concentrations with greater bioavailability of active ingredients.
- This large molecule, injectable-grade HA cream (Intensive Treatment LINES; LM-HA cream) incorporates 5 types of highly purified HA (1.6M-2.2M Da) into its formulation.
- Herein, we describe the efficacy and tolerability of a LM-HA cream in photoaged skin using InterFuse technology.

OBJECTIVE

- To evaluate the clinical effectiveness and tolerability of a large molecule, HA-containing cream in improvement in the appearance of photoaged skin with twice-daily, targeted treatment over 8 weeks.

METHODS

Study Design and Treatment

- Prospective, open-label study conducted in 25 females (30-65 years) with moderate photoaging in ≥1 of following areas: Fine Lines/Wrinkles, Crow's Feet, Forehead Lines, and Nasolabial Folds.
- Inclusion criteria included no known medical conditions that may interfere with study participation.
- Exclusion criteria included any dermatologic disorder that may interfere with evaluation (i.e. severe acne vulgaris) concurrent therapy with any medication or use of any skin care product or procedure that may interfere with evaluation.
- Subjects were instructed to apply a dime-size amount of LM-HA cream to clean skin and targeted regions twice daily for 8 weeks. Subjects were instructed to wait 5 minutes before applying provided sunscreen and moisturizer, and routine makeup products.
- A subset of subjects (n=5) applied the LM-HA cream twice daily to a spot on their forearm delineated by a small temporary tattoo for ultrasound measurements. Tattoos were placed 2 inches from each wrist. Ultrasound measurements were taken at baseline and weeks 1, 2, 4, and 8.

Study Endpoints

- The primary endpoint was to determine the efficacy of the LM-HA cream in reducing the appearance of photoaging as measured by blinded expert-graded evaluation based on digital photography using Canfield Scientific VISIA-CR at baseline, 4, and 8 weeks.
- The 4 categories evaluated included: Fine Lines/Wrinkles, Crow's Feet, Forehead Lines, and Nasolabial Folds (scale ranged from 0 [none] to 5 [severe]). Successful results were interpreted as a positive shift of one scalar unit in the treated area/category.
- Subjects completed a 13-item self-assessment questionnaire at baseline, 2, 4, and 8 weeks. An average score was taken for the entire study population for each individual question.
- Tolerability was assessed throughout the study.

RESULTS

Subject Demographics and Disposition

- All subjects (N=25) completed the study.
- The average age of subjects was 58 years, and the majority of subjects were Fitzpatrick Skin Type II.

Efficacy Results

Expert-Graded Evaluation (Fig. 1 and 2)

- Expert-grader evaluations demonstrated 31%, 23%, and 21% average reductions in severity scores from baseline in Crow's Feet, Forehead Lines, and Fine Lines/Wrinkles at 8 weeks, respectively.
- 68% of subjects demonstrated improvement in Nasolabial Folds from baseline at 8 weeks.

Figure 1. Average Reduction in Severity Over 8 Weeks.

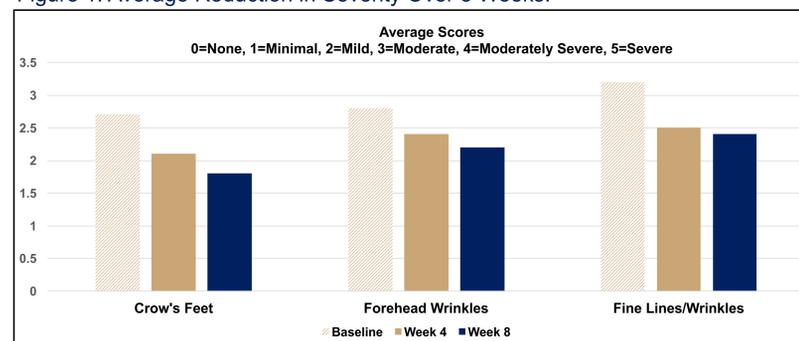
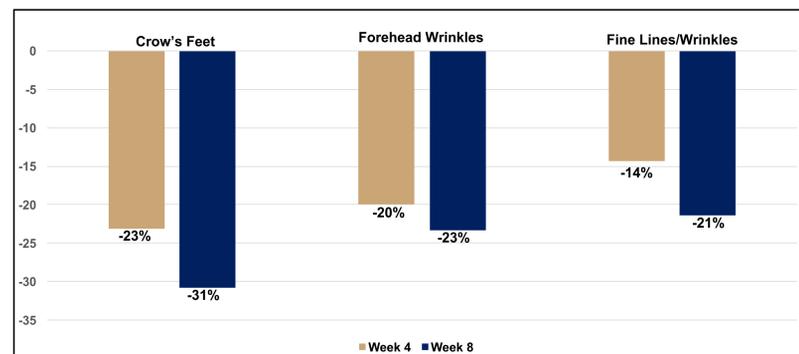


Figure 2: Average Percentage Reduction in Severity at 4 and 8 Weeks.



Subject Self-Assessment

- The highest level of agreement reported at week 8 included:
 - Reduces the appearance of Fine Lines/Wrinkles
 - Improves Roughness & Dryness
 - Improves Softness & Smoothness
- Two categories showing considerable, progressive improvement from baseline at 2, 4, and 8 weeks were 'reduces the appearance of deeper folds' and 'skin looks more youthful and healthy'.
- For questions related to 'firmness', 'radiance', 'texture' and 'hydration', improvements were observed early, with progressive improvements at 4 and 8 weeks.
- The majority (72%) of subjects reported their skin appeared younger after 8 weeks.
- Nearly 90% of subjects reported agreement in reductions in the appearance of fine lines/wrinkles, and improvements in skin smoothness and softness.

Ultrasound Assessment

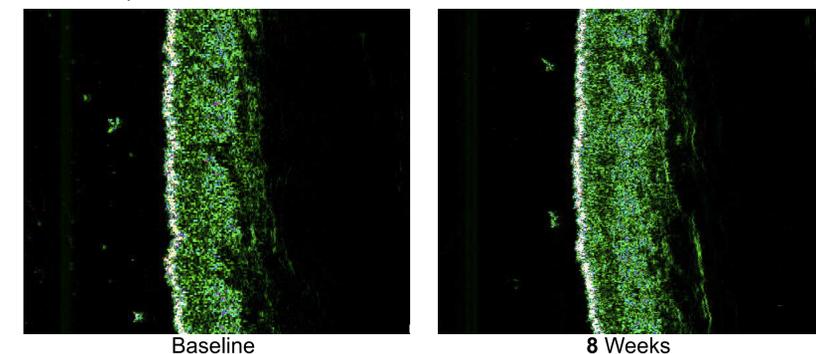
- Ultrasound images demonstrated increased skin thickness and density from baseline measurements at week 8. (Fig. 3)

References

1. Mayoral FA, et al. The skin health and beauty pyramid: a clinically based guide to selecting topical skincare products. *J Drugs Dermatol.* 2014;13(4):414-421.
2. Essendoubi M, et al. Human skin penetration of hyaluronic acid of different molecular weights as probed by Raman spectroscopy. *Skin Res Technol.* 2016;22(1):55-62.
3. Pavicic T, et al. Efficacy of cream-based novel formulations of hyaluronic acid of different molecular weights in anti-wrinkle treatment. *J Drugs Dermatol.* 2011;10(9):990-1000.



Figure 3. Ultrasound measurements at baseline and 8 weeks. False color was used to represent the ultrasound reflections of the stratum corneum and dermis.



Safety Results

- 5 subjects reported mild and transient adverse events
 - 1 mild breakout may have been related to study product
 - No reported adverse events were severe
 - No subjects discontinued treatment

CONCLUSIONS

- Twice daily use of a large molecule HA cream resulted in a 31%, 23%, and 21% average reduction in the severity of Crow's Feet, Forehead Wrinkles, and Fine Lines/Wrinkles at 8 weeks, respectively.
- 68% of subjects demonstrated improvement in Nasolabial Folds from baseline at 8 weeks.
- The highest rates of subject satisfaction in visible improvement occurred in Fine Lines/Wrinkles and Smoothness and Softness.
- Treatment with an injectable-grade HA cream was well tolerated throughout the study period.
- Twice daily treatment with a large molecule, hyaluronic acid-containing cream demonstrated progressive, visible improvements in Crow's Feet, Forehead Lines, Fine Lines/Wrinkles, and Nasolabial Folds over 8 weeks.