

HAIR DENSITY

your most beautiful age is now

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MIDSS
DESIGNERS
OF
TIMELESS
REGENERATION

presents

salmostim

by **Pluryal**

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DENSIFY
SILK
HAIR DENSITY

MD SKIN SOLUTIONS
LABORATORIES
at a glance

SINCE **2009**

29
PRODUCTS

75
COUNTRIES

5
TECHNOLOGIES

>25M
TREATMENTS

HAIR DENSITY
regenerates the scalp

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1. *about* MD SKIN SOLUTIONS

With over a decade and a half of expertise in the aesthetics industry and a remarkable track record of outstanding results, **MD Skin Solutions** is a trusted company representing a holistic aesthetic approach focused on providing professionals around the world with innovative solutions enabling their patients to achieve healthy, radiant skin without surgical interventions.

MD Skin Solutions is home to two main brands: **Pluryal**, a trusted provider of medical aesthetic products available in over 75 countries worldwide, and as newest addition, **meso'me**, a range of at-home cosmeceutical therapies inspired by professional mesotherapy, which allows to continue treatments any place, any time.

Currently, **MD Skin Solutions'** portfolio includes 29 products in 5 ranges at the forefront of science and technology. From dermal fillers to collagen biostimulators and densifiers, mesotherapy treatments, as well as complementary home-use microneedling, **MD Skin Solutions** is dedicated to bring the world exceptional aesthetic solutions that address patients' unique skin concerns.

2. *why* SALMOSTIM?

Today's patients seek natural, non-pharmaceutical approaches to hair restoration.

They look for:

- Improved hair density^[1]
- Reduction in hair shedding
- A healthier scalp environment
- A treatment compatible with both early and established hair thinning

Polynucleotides (PNs) meet these expectations by activating the scalp's self-repair processes, **improving follicle metabolism and rebalancing the microenvironment** affected in androgenetic alopecia (AGA).

PNs are recognized for^[2]:

- Excellent tolerance
- Regenerative biochemical properties
- Suitability for both men and women across AGA stages I-IV

3. *what are* POLYNUCLEOTIDES (PNs)?

Polynucleotides are purified DNA fragments composed of nucleotides (sugar, base, phosphate) capable of stimulating cellular repair and promoting microenvironmental balance.

In Pluryal® HAIR DENSITY, PNs are:

- Extracted from purified farmed salmon DNA
- Protein-free and non-allergenic
- Biocompatible and fully absorbable

Upon injection into the scalp, **PNs interact with key receptors**, including A2 purinergic receptors and fibroblast growth factor pathways, supporting the trophic activity of dermal papilla cells, which govern the hair growth cycle.



4. *what is* SALMOSTIM® TECHNOLOGY?

SALMOSTIM® is an advanced extraction and purification technology for injectable-grade polynucleotides, developed to ensure maximum safety, purity and regenerative performance.

Why Farmed Salmon Matters?

Pluryal uses **controlled, certified farmed salmon milt** as its source of DNA.

This ensures:

- **Full traceability and safety oversight:**
Controlled aquaculture standards reduce biological variability and minimize the risk of contaminants often associated with wild-caught sources.
- **Consistent quality across batches:**
Standardized feeding, environment, and reproductive cycles deliver stable nucleic-acid profiles ideal for medical-grade purification.
- **Reduced allergenic potential:**
Farmed salmon allows strict pre-processing controls to ensure the DNA is free of proteins, lipids, and immunogenic residues.
- **Higher sustainability and ethical sourcing:**
Controlled farming avoids ecological disruption and enables more responsible large-scale production.

SALMOSTIM® Purification Advantages

Through multi-stage refinement, SALMOSTIM® technology provides:

- **High Purity:**
Advanced filtration eliminates proteins, lipids, and impurities for ultra-clean, injectable-grade PN.
- **Biological Safety:**
Protein-free, non-allergenic, fully absorbable.
- **Certified Quality:**
Manufactured under ISO 13485 standard and Medical Device CE certification.
- **Molecular Integrity:**
Maintains the long-chain structure of polynucleotides required for hydration, ECM remodeling, and fibroblast stimulation.
- **Batch-to-Batch Consistency:**
Guaranteed performance and reproducibility, essential for clinical reliability.

5. *how do* POLYNUCLEOTIDES IMPROVE HAIR DENSITY?

Pluryal® HAIR DENSITY provides a multi-level regenerative effect on the scalp and follicle environment:

- **Follicular Stimulation:** PNs activate metabolic pathways (FGF-related) and A2A purinergic receptors that promote the activity of dermal papilla cells^[3], key drivers of the anagen (growth) phase.
- **Improved Hair Cycle Dynamics^[4]:**
 - Increases anagen/telogen ratio.
 - Reduces premature miniaturization.
 - Supports the growth of thicker hair shafts.
- **Anti-inflammatory Action:** PNs reduce inflammatory mediators in the scalp, an important factor in stabilizing AGA progression^[5].
- **Microcirculation Support^[6]:** Enhances local perfusion, oxygenation, and nutrient supply.
- **Structural Reinforcement^[7]:** Promotes ECM remodeling around the follicle bulge, supporting anchorage and reducing hair shedding.



6. PLURYAL® HAIR DENSITY - *fact sheet*

Composition (per 2 ml syringe):

Ingredient	Concentration
Polynucleotides (PN)	15 mg (7.5 mg/ml)

HAIR
STRENGTH
AT THE
ROOT

Presentation:

- Sterile prefilled 2 ml syringe.
- Includes two 30G needles.
- CE marked, for professional use only.

Indications:

- Androgenetic alopecia in women and men.
- Telogen effluvium.
- Adjuvant therapy after hair transplant, LED light and PRP.

Treatment Areas:

- Scalp (frontotemporal region, mid-scalp, vertex).

7. PLURYAL® HAIR DENSITY - *unique benefits*

- **Clinically proven reduction** in hair shedding
- **Increases** terminal hair count
- **Improves** hair thickness and density parameters
- **Suitable** for both men and women
- **Excellent safety** profile
- **Non-pharmaceutical** approach to hair restoration

The carefully balanced PN concentration **ensures optimal stimulation with excellent tolerability**, even in sensitive scalps.

8. *proven efficacy of* PLURYAL® HAIR DENSITY

A clinical study* using Pluryal® HAIR DENSITY was conducted on 20 patients and published in the Archives of Dermatological Research^[4].

Study Design & Population

- **20** patients (10 males, 10 females)
- Mean age: **37.7 ± 8.1** years
- Diagnosed with **androgenetic alopecia** (AGA):
 - **Hamilton-Norwood II-IV** (men)
 - **Ludwig I-II** (women)
- Exclusion: Any hair-loss treatments in previous 3 months, or allergy to ingredients.

Treatment Protocol

Patients received **10 intradermal injection sessions** of Pluryal® HAIR DENSITY intradermal gel (15 mg PN) over **4 months**, following a structured regimen (4 weekly sessions + 4 bi-weekly + 2 monthly sessions).

Evaluation Methods & Tools

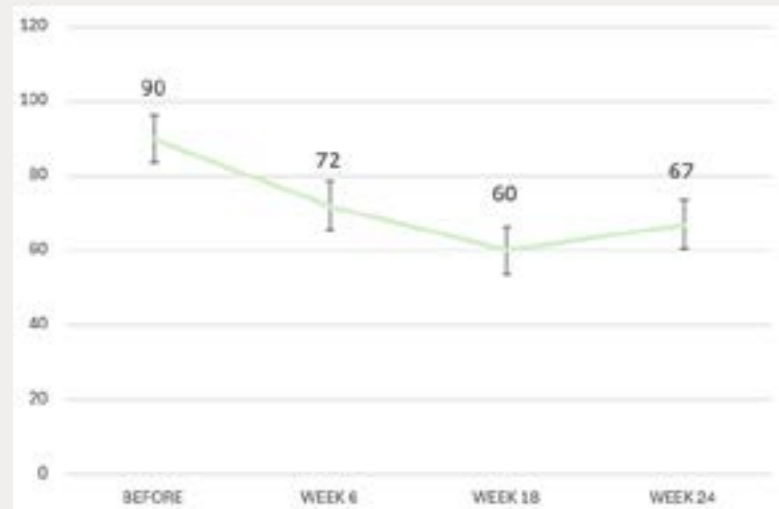
The study used **objective and subjective assessment tools** included standardized scalp photography, trichoscan measurements, combing test, patient satisfaction scoring and safety monitoring.

*Clinical study on 20 patients published in the "Archives of dermatological Research" and conducted by Ayatollahi A., Firooz A., Samadi A., Kashani MN., Zamani S., Efficacy and tolerability assessment of a polynucleotide-based gel for improvement of pattern hair loss.

Main Results

1. Significant Reduction in Hair Shedding.

Hair fall decreased at every follow-up point:

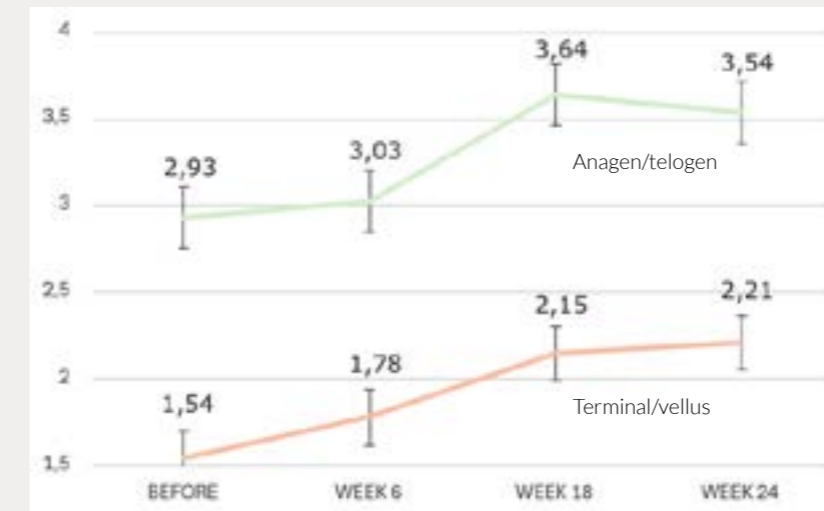


Hair density (per cm²) before treatment and at weeks 6, 18 and 24.

» Statistically significant at all timepoints ($p < 0.05$).

2. Improvement in Hair Growth Cycle Dynamics.

Increase in Terminal Hair Count:



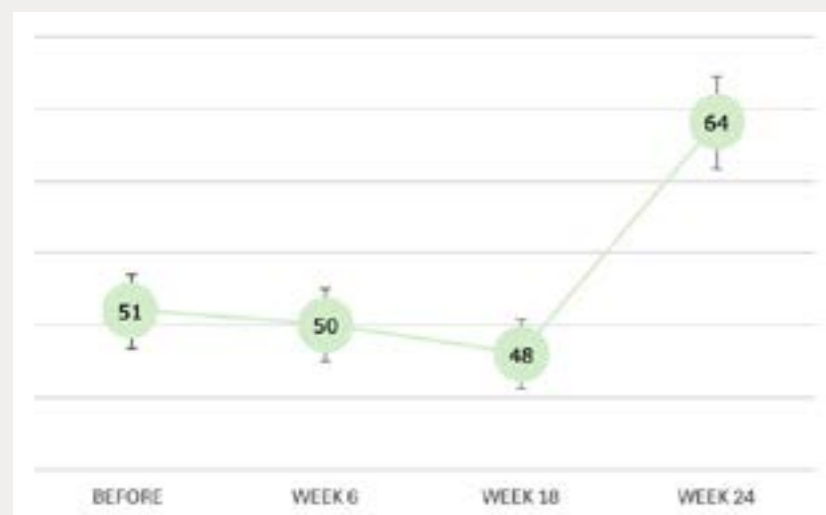
Anagen/telogen ratio and terminal/vellus ratio before treatment and at weeks, 6, 18 and 24.

- **Anagen/telogen ratio increased.**
- **Terminal/vellus ratio improved.**
- » Indicates a shift toward **more active growth phase and reversal of miniaturization.**
- **+12.8% terminal hairs** at Week 18.
- **+24.2% terminal hairs** at Week 24.
- » **Compared favorably with typical gains** seen with minoxidil 2-5%.



3. Trichoscan Improvement in Hair Thickness.

Significant increase in hair shaft thickness at Week 24 ($p = 0.04$):



Hair thickness (microns) before treatment and at weeks 6, 18 and 24.

» Suggests structural reinforcement of hair fibers.



4. Strong Patient-Reported Improvement.

Percentage of patients rating hair shedding as «improved» or better:

- **85%** at Week 6
 - **50%** at Week 18
 - **47.4%** at Week 24
- » **Results corresponded closely** to objective comb-test reductions.

5. Positive Safety Profile.

Adverse effects were mild and transient:

- Mild headache.
 - Local swelling.
 - One reversible maculopapular rash.
- » **No serious adverse events reported.**

Conclusion:

The study demonstrates that Pluryal® HAIR DENSITY (PN 15 mg):

- **Reduces** hair shedding significantly
- **Improves** hair thickness and quality
- **Increases** terminal hair count
- **Enhances** hair growth cycle balance
- **Provides visible improvement** supported by photography
- **Is safe and well tolerated** in both men and women

This evidence positions Pluryal® Hair Density as a **clinically validated regenerative treatment for androgenetic alopecia.**

9. *injection* TECHNIQUES & PROTOCOL

Injection Depth: Intradermal (scalp).

Techniques:

Microbolus, Multi-puncture, or Linear threading (optional for diffuse area).

Protocol:

Androgenetic alopecia:

- **Initial treatment:** 10 sessions over 4 months:
 - Weeks 1–4: 1 session per week (4 sessions).
 - Weeks 6–12: 1 session every 2 weeks (4 sessions).
 - Weeks 14–16: 2 monthly sessions.
- **Maintenance:** 1 session per month or according to shedding severity.

Telogen effluvium:

- Initial treatment: 3 monthly sessions over 3 months.
- Maintenance: Repeat the course after 6 months (if necessary).

Post-hair transplantation:

- **Treatment:** 3 monthly sessions – 3 months after the transplantation.



10. CASE *studies*

Case 1:
Hair loss & thickness, increased growth.

Courtesy of:
Prof. Alireza Firooz
Dermatologist (Iran)



Before After
24 weeks of treatment

Case 2:
Hair loss & thickness, increased growth.

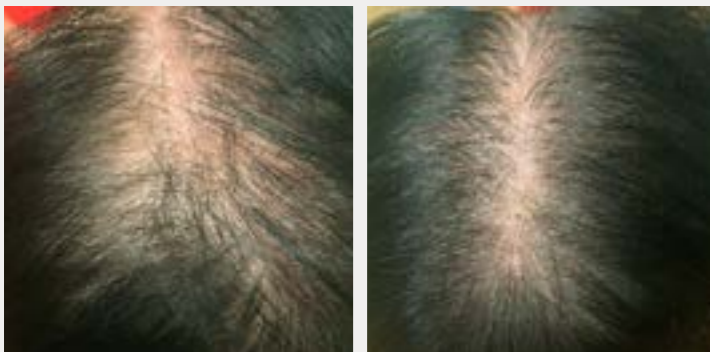
Courtesy of:
Prof. Alireza Firooz
Dermatologist (Iran)



Before After
18 weeks of treatment

Case 3:
Hair loss & thickness, increased growth.

Courtesy of:
Prof. Alexander Turkevych
Dermatologist (Ukraine)



Before After
5 weekly treatments

Case 4:
Hair loss & thickness, increased growth.

Courtesy of:
Prof. Alexander Turkevych
Dermatologist (Ukraine)



Before After
5 weekly treatments

Pluryal® HAIR DENSITY is a class III medical device which must only be used by doctors who have received specific training on the intradermal injection techniques. Read the instructions before use. Inform the patients about possible side effects.

Sources:

- ¹ Si-Hyung Lee MD, Zhenlong Zheng MD, PhD, Jin-Soo Kang MD, Do-Young Kim MD, Sang Ho Oh MD, PhD, Sung Bin Cho MD, PhD. Therapeutic efficacy of autologous platelet-rich plasma and polydeoxyribonucleotide on female pattern hair loss. (2014).
- ² M. Cavallini et al. (2021 data in 2024/2025 report). Efficacy and tolerability of polynucleotide-based gel for pattern hair loss. *Springer/Research Square*.
- ³ *Applied Sciences*. (2025). Reporting clinical and preclinical evidence of hair improvement with PDRN/PN.
- ⁴ A. Firooz et al. Efficacy and tolerability assessment of a polynucleotide-based gel for improvement of pattern hair loss. *Archives of Dermatological Research*. (2024). 316:331.
- ⁵ T. Kim et al. Polynucleotides as a novel therapeutic approach in androgenic alopecia. *Archives Dermatol Res*. (2025).
- ⁶ Aawrish Khan, Guobao Wang, Feng Zhou, Lunli Gong, Jun Zhang, Lili Qi, Haiyan Cui. Polydeoxyribonucleotide: A promising skin anti-aging agent, *Chinese Journal of Plastic and Reconstructive Surgery*, Volume 4, Issue 4, Pages 187-193, ISSN 2096-6911. (2022).
- ⁷ Shin S, Baek E, Kim K, Kim K and Park E. Polydeoxyribonucleotide exerts opposing effects on ERK activity in human skin keratinocytes and fibroblasts, *Mol Med Rep* 28: 148. (2023).

*hair
density*

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YOUR
SKIN
TO
REGENERATE

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