



30
YEARS
PROTEOGLYCAN
RESEARCH

EXPERTS' TOP CHOICE FOR HAIR PRESERVATION & HEALTHY GROWTH

- More than 100 published scientific studies
- 30 years of clinical development
- Safe and side-effect-free
- 100% drug-free



Bioactive Proteoglycan Formulation



HAIR LOSS

Hair is an important part of a person's body image in social interactions, which is why hair loss is a considerable physiological and social problem for the people who experience it.

For many people, hair loss can feel like losing part of their identity. Research has highlighted that hair loss can lead to loss of self-confidence, concerns about getting older, negative effects on social life, and feelings of depression.¹ In addition, psychological stress has been proved to further aggravate hair loss to form a vicious cycle², which is why it is important to manage it early.

MAJOR CAUSES OF HAIR LOSS

Various underlying factors individually or in combination contribute to the pathogenesis of hair loss, including:



STRESS



CERTAIN MEDICATIONS



HORMONES



PREGNANCY AND CHILDBIRTH



DIET



HAIRSTYLING



HEALTH



SMOKING



DIABETES



GENETICS

HAIR LOSS IN MEN



Male Pattern Hair Loss (MPHL) is the most common type of hair loss in men. It is usually characterized by two main features: (1) a gradual 'bi-temporal recession' of the hairline early in the process; (2) frontal and vertex hair follicles decrease in size and activity during successive hair cycles presented clinically as 'hair thinning'.

Dihydrotestosterone (DHT) is a significantly more potent agonist of the androgen receptor. After binding to its receptor, DHT triggers metabolic responses that collectively induce a gradual shortening of anagen phase and elongation of telogen phase, forcing the follicles to enter a prolonged dormant phase.³

HAIR LOSS IN WOMEN



Hair loss can be as prevalent in women as in men: 12% of women aged 20-29 years old^{4,5} and 50-75% of women over 65 years old⁶ suffer from Female Pattern Hair Loss (FPHL). The most common prevalent and clinically-significant types of hair loss in women are Female Pattern Hair Loss (FPHL) and Telogen Effluvium (TE).

FPHL is by far the most common type of hair loss occurring in female adults. FPHL was initially thought of as a variant of MPHL, but it is now recognized as a separate entity.⁷

HAIR LOSS IN MEN & WOMEN ARE DIFFERENT

Unlike men, women rarely develop 'true baldness' but instead a diffuse slowly-progressive thinning of hair. This is mainly because androgens have a lower impact on hair follicles in women, resulting in women to be less susceptible to the effect of androgens than men.

This suggests that factors beyond androgens are involved in FPHL, which is why treatments targeting DHT alone have limited efficacy on women.



Women have 18 times lower levels of plasma testosterone than men.



Women have 50% less expression of 5α-reductase than men.



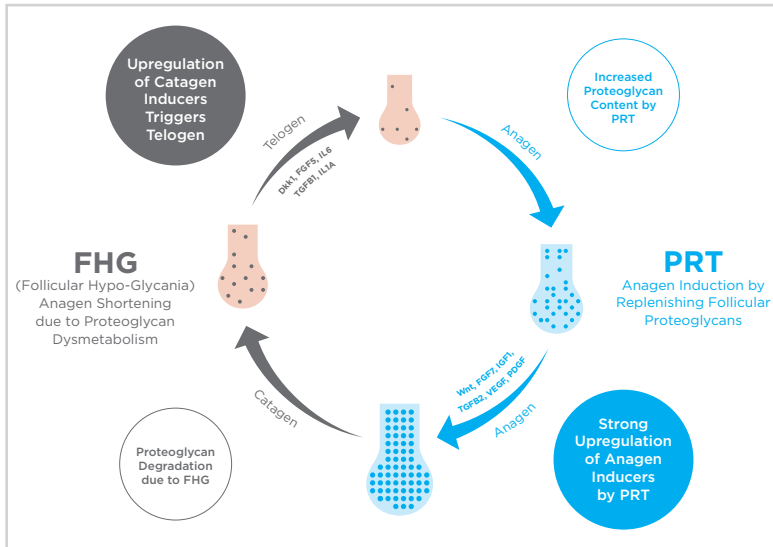
Women have 40% less expression of Androgen Receptor Protein than men.



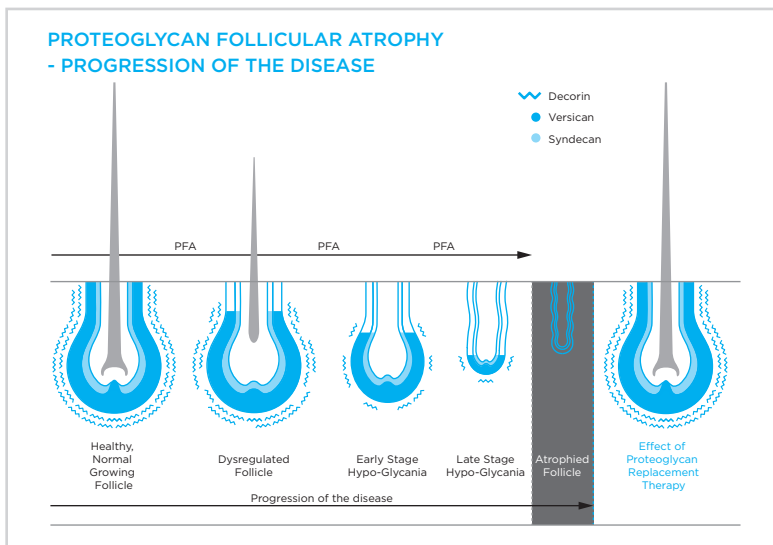
Women have 600% higher expression of aromatase enzyme than men.

PROTEOGLYCAN AND THE DISRUPTION OF HAIR GROWTH CYCLE

Proteoglycans, a specific type of protein, have been shown to have integral functions in the development and growth regulation of hair follicles. A certain proteoglycan concentration in and around the hair follicle is needed for optimal growth and cycling.⁸



The defect or depletion of proteoglycans has been recognized as the primary cause of hair loss. Follicular miniaturisation is caused by a gradual decline in the size of the dermal papilla and consequently the whole follicle. Over time, these hair follicles eventually stop producing new hairs, leading to a visible reduction in hair density.



An advanced decline of proteoglycans leads to an obvious atrophy in the structure of hair follicles. This process, known as Proteoglycan Follicular Atrophy (PFA), is a fundamental cause of follicular miniaturisation that disrupts the Hair Growth Cycle.

External factors (stress) and other internal factors (androgens, cytokines) can affect the equilibrium between Anagen inducers (activators) and Catagen inducers (inhibitors) in both men and women. When there are more inhibitors than activators, hair follicles are stimulated to jump to the Catagen phase in the Hair Growth Cycle, resulting in hair shedding.

For example, in patients with MPHL, androgen hypersensitivity causes hair follicles to lose their ability to regrow to their original size. This disrupted replenishment of papillary proteoglycans triggers a vicious cycle of cellular dysfunction, thus shortening the lifespan of the hair follicle.

LIMITATIONS OF CURRENT HAIR LOSS TREATMENTS

At present, available options to treat hair loss in men and women have undesirable tolerability due to disturbing side effects and poor clinical outcomes. To date, there is no single treatment that can account for the significant differences in male and female hair loss.

Despite evidence to show that deregulated synthesis and function of proteoglycans play central roles in the development of hair loss, conventional treatments also do not address PFA, which is a common cause of hair loss.

Male Treatment Options

Finasteride:

- Long-term use has led to sexual adverse effects: erectile and ejaculatory dysfunction, as well as diminished libido occur in up to 40% of users.⁹
- There is a likely association between finasteride use and depression and anxiety-related behaviours.¹⁰

Female Treatment Options

Vitamins & minerals supplements (biotin, zinc, niacin, Vitamin B):

- Although nutritional deficiency is associated with hair loss, vitamin deficiency is extremely rare.
- Only up to 2% of hair loss is due to vitamin deficiency.
- No randomised controlled trials to prove the efficacy of supplementation with biotin in healthy individuals.¹¹

Male & Female Treatment Options

Topical minoxidil

- Some patients cannot tolerate this medication due to irritant scalp dermatitis and hypertrichosis at the site of application caused by the solution additives or minoxidil itself.
- Cannot be used in cases with scalp eczema or infection or in the presence of coronary heart disease, arrhythmia or heart failure.

HAIR GROWTH+ INCLINIC BY NOURKRIN®: A PROTEOGLYCAN REPLACEMENT THERAPY

Backed by more than 30 years of clinical research and over 100 published clinical papers, Hair Growth+ inCLINIC by Nourkrin® is a clinically proven Proteoglycan Replacement Therapy for the treatment of all types of hair loss. It is indicated as a primary monotherapy or in combination with other medications.

- Treatment of all stages of Male & Female Pattern Hair Loss
- Treatment of Acute and Chronic Telogen Effluvium
- Prevention of hair loss in individuals with strong genetic disposition for hair loss

Hair Growth+ inCLINIC by Nourkrin® is formulated with Marilex®-P, which is obtained through a proprietary extraction process from fractionated fish extract. It has high ratios of specific bioactive proteoglycans which replenish proteoglycans during the Anagen phase and prevent follicular miniaturisation.

Key Functional Proteoglycans

- **Versican:** performs EGF-like activity for Anagen initiation and maintains growth of hair fiber by continuous Wnt stimulation
- **Decorin:** blocks TGF-β1, a potent apoptosis and Catagen inducer
- **Syndecan:** promotes cell signaling that induces and maintains growth of the hair shaft and the inner root sheath

Other Key Ingredients

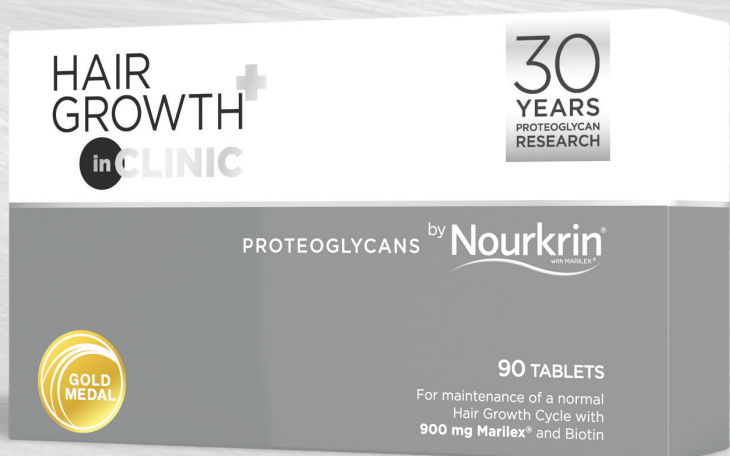
- Silica: lowers rate of hair loss and increases hair brightness
- Biotin: promotes hair growth and reduces hair shedding

Dosage

- TO ACTIVATE HAIR GROWTH: Two tablets in the morning and one in the evening, preferably after food. Minimum duration of therapy is 4-6 months. Thereafter a reduced-dose therapy should be followed, according to the Maintenance dosage below.
- TO MAINTAIN HAIR GROWTH: One tablet per day to be taken orally, preferably after food. Should hair growth need an additional boost, switch back to the Activation dosage above for the recommended minimum duration.

Precautions

Should not be consumed by patients who are allergic to fish.



MECHANISMS OF ACTION

1. Stimulating Dormant Hair Follicles to Enter Anagen

- Specific proteoglycans trigger the Anagen phase in dormant telogenic hair follicles.
- This helps to kickstart the Hair Growth Cycle and in turn moderate the abnormally increased Telogen/Anagen ratio.

2. Inhibiting Premature Catagen Initiation in Active Follicles

- Hair Growth+ inCLINIC by Nourkrin® enhances the concentration of proteoglycans, in turn improving the quality of the extracellular microenvironment.
- Growth-inductive ability of papillary fibroblasts and stem cells is maintained.

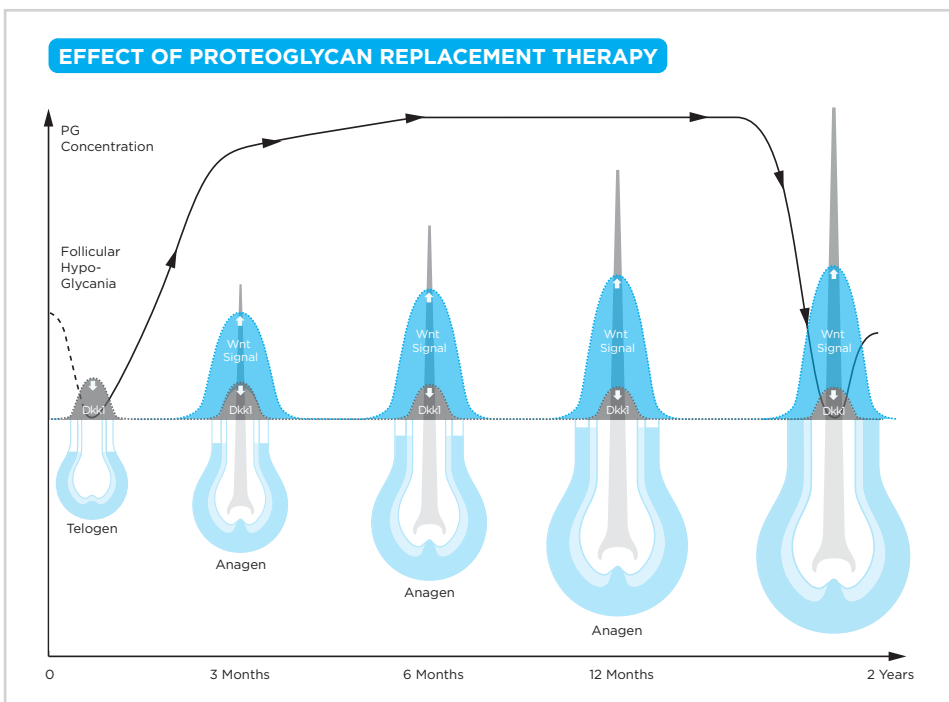
3. Preventing Miniaturisation by Treating Proteoglycan Follicular Atrophy (PFA)

- Hair Growth+ inCLINIC by Nourkrin® directly deposits specific functional proteoglycans into the follicular matrix, hence counteracting PFA and follicular miniaturisation.
- New proteoglycans are created as Marilex®-P supplies the building blocks and increases the activity of fibroblasts.
- Replenishment of follicular proteoglycans during early Anagen phase reverses the declining trend of miniaturisation.

4. Protecting Hair Follicles from Inflammation-mediated Damage

- Reduced expression of follicular proteoglycans disrupts their protective barrier around the hair follicle, leading to an immune response that causes Pattern Hair Loss.
- Replenishing follicular proteoglycans prevents inflammation and in turn reduces hair loss.

The effect of Proteoglycan Replacement Therapy (PRT) in addressing Proteoglycan Follicular Atrophy (PFA) induced hair follicle miniaturisation and cycle dysregulation.



Comparing Hair Growth+ inCLINIC by Nourkrin®
with Conventional Hair Loss Treatments

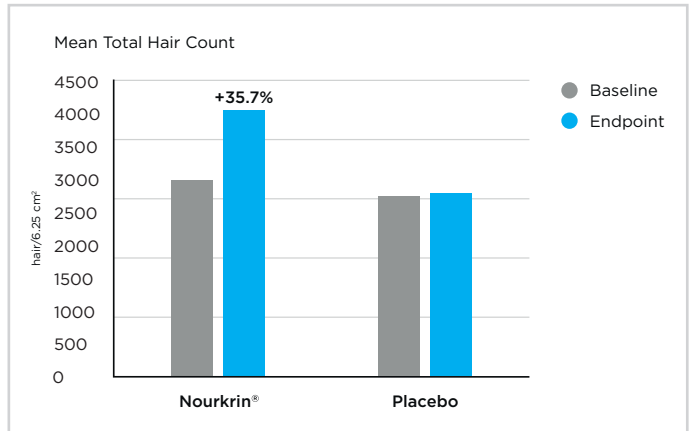
	Hair Growth+ inCLINIC by Nourkrin®	Finasteride	Minoxidil	Vitamin Supplements
Treats both MPHL and FPHL	✓	✗	✓	✗
Treats Telogen Effluvium	✓	✗	✓	✗
No adverse side effects on health	✓	✗	✗	✓
No excessive facial or body hair	✓	✓	✗	✓
Addresses follicular miniaturisation and PFA as main causes of hair loss	✓	✗	✗	✗
Exhibits clinically proven effects	✓	✓	✓	✗
Produces subjective perception of improvement due to a placebo effect	✓	✓	✓	✓
Suitable for use in the long term for treatment or maintenance	✓	✗	✗	✓
Possesses anti-inflammatory properties	✓	✗	✗	✗

CLINICAL EVIDENCE

Promotes hair growth in both genders

In a randomized, double-blind, placebo-controlled study conducted on 55 volunteers of both genders, the average hair growth increase was 35.7% in the group using Nourkrin®, compared to 1.5% in the placebo group (P < 0.001).

Thom, E. (2006). *Nourkrin®: Objective and Subjective Effects and Tolerability in Persons with Hair Loss. Journal of International Medical Research*, 514-519.



Stabilises hair loss

A group of 178 patients received an oral dose of 600 mg of marine-based extract mixture of proteins and polysaccharides daily for six months as treatment for androgenetic alopecia. A significant decrease of hair loss was observed by 75.3% of patients and 14.6% showed partial regrowth of hair. In less severe cases, the result of the treatment was significantly superior as compared with patients with long-term severe baldness.

Results suggest that the use of marine-based polysaccharides are beneficial for treatment of Androgenetic alopecia in order to stabilise hair loss.

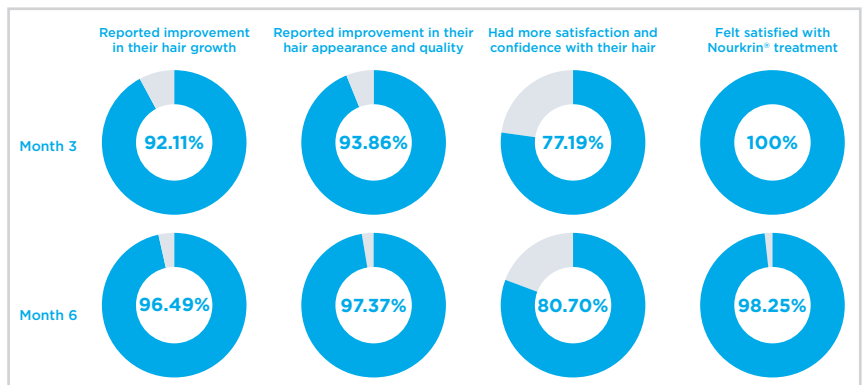
Pereira, M. (1997). *Treatment of Androgenetic Alopecia with a Marine-Based Extract of Proteins and Polysaccharides. Revista Brasileira De Medicina Vol. 54 - No 3 - March 1997: 144-149.*

Improves patient quality of life

Findings from a 6-month study with 114 randomly selected females in the United Kingdom showed that majority of patients under treatment have been satisfied with using Nourkrin® and experienced a positive change in the quality and appearance of their hair as early as 3 months into the study.

Patient satisfaction rates improved after 6 months, indicating that an enhanced treatment success rate can be achieved by longer administration periods.

Wadstein, J. Thom, E. (2019). *Treating Female Diffuse Hair Loss using Nourkrin® Woman (with Marilex®) - An Open-label, Subjective, Outcome Study on Hair Growth and Appearance, Self-Confidence and Treatment Satisfaction. Journal of Clinical Dermatology and Therapy.*



CASE STUDIES

Female patient with Alopecia Areata treated with Marilex® as a monotherapy for 8 months.

Month 0



Month 4



Month 6

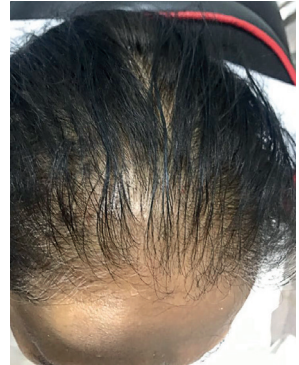


Month 8

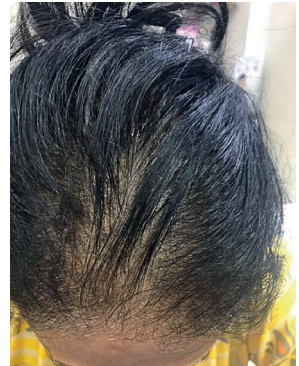


Female patient with FPHL treated with Marilex® and PRP for 1 month.

Month 0



Month 1

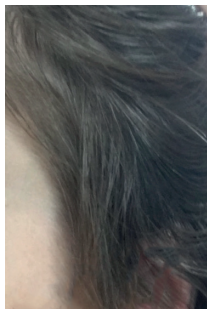


Female patient with Telogen treated with Marilex® for 6 months.

Before



After

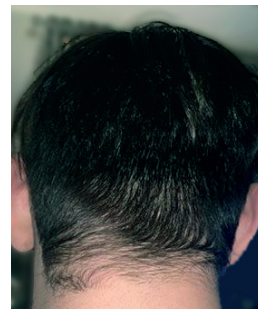


Male patient with Alopecia Areata treated with Marilex® as a monotherapy for 3 months.

Before



After



FREQUENTLY ASKED QUESTIONS

What makes Hair Growth+ inCLINIC by Nourkrin® unique from other competitors in the market?

Hair Growth+ inCLINIC by Nourkrin® is the only Proteoglycan Replacement Therapy on the market, and it has more than 30 years of proven brand history in international markets.

Is Hair Growth+ inCLINIC by Nourkrin® suitable for everyone?

Hair Growth+ inCLINIC by Nourkrin® is suitable for everyone except those with allergies to fish as Marilex®-P is a marine-derived extract. Hair Growth+ inCLINIC by Nourkrin® does not contain shellfish.

Will patients experience growth of body or facial hair?

Hair Growth+ inCLINIC by Nourkrin® contains specific proteoglycans that are only involved in the hair follicle cycling of scalp hair. This means that Hair Growth+ inCLINIC by Nourkrin® does not affect the growth of body hair.

Are there any side effects from taking Hair Growth+ inCLINIC by Nourkrin®?

Hair Growth+ inCLINIC by Nourkrin® is entirely based on drug-free ingredients which are evaluated as safe by the food and drug authorities globally. There have been no known side effects in the more than 30 years of brand history.

Does Hair Growth+ inCLINIC by Nourkrin® interfere with any medication?

No, there are no known or registered instances of interference as Hair Growth+ inCLINIC by Nourkrin® is naturally based. However, if patients are on medication, they are recommended to check with their doctors before commencing with any supplement programme.

How long does it take before patients start to notice a difference in their hair?

Most users start to see a difference after 2-3 months of proper use on the recommended daily intake.

Can Hair Growth+ inCLINIC by Nourkrin® be taken for long periods?

Hair Growth+ inCLINIC by Nourkrin® is safe to take for indefinite periods and is ideal for long-term maintenance after the desired results have been achieved.

What happens if patients stop taking Hair Growth+ inCLINIC by Nourkrin®?

If patients' hair loss is due to acute, temporary factors such as stress or hormonal changes, their results after 6 months may remain over time, given that these lifestyle factors have also been improved or changed. If their hair loss is related to DHT, genetics or is chronic, the condition may return after the treatment has ended.

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