TrichoTest™

Pharmacogenetic approach to personalize alopecia treatment

Fagron genomics

About Alopecia

Alopecia is an abnormal hair loss that most commonly affects the scalp and is caused by an interruption in the hair growth cycle, whether due to age, autoimmune conditions, or stress.

The efficacy of the most recognized alopecia treatments is not absolute

Each person's body is unique, and their response to treatment can vary. Some people may experience significant hair growth with a particular treatment, while others may not see any improvement.

38% of patients

Low efficacy of Minoxidil

Although topical minoxidil exhibits a good safety profile, its efficacy remains relatively low in the overall population.

4-6 months

Trial before noticing improvement

And must be used indefinitely to maintain a response.

Only <11%

Responds to Finasteride

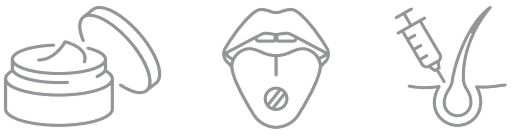
Although arrests hair loss, few achieve marked hair regrowth.

TrichoTest™

Pharmacogenetic approach to personalize alopecia treatment in males and females

TrichoTest™ provides personalized treatment recommendations for all administration ways

Its algorithm combines genetic data with relevant patient's anamnesis and possible contraindications to select the most appropriate vehicles and active pharmaceutical ingredients (APIs) among a list of 11 vehicles and 62 APIs (Finasteride, Minoxidil, Latanoprost, 17-a Estradiol, Cetirizine Spironolactone, Triamcinolone acetonide, among others).



TrichoTest™ analyzes 26 polymorphisms

associated with metabolic pathways predicting treatment responses with relevant patient's anamnesis (intolerances, hypersensitivity, diseases, medication, blood pressure, among others).

All patients, with scalp or hair problems, are candidates for TrichoTest™

Male & Female

Suitable for the most common Alopecia

- **Androgenetic Alopecia**
- **Alopecia Areata**
- **Telogen Effluvium**

The genetic variations analyzed are associated with 9 categories

1. Prostaglandins and sulphotransferase
2. Anti-inflammatory drugs
3. Anti-androgens
4. Stimulation of circulation
5. Collagen synthesis
6. Insulin-like growth factor
7. Vitamins
8. Minerals
9. Antioxidants

TrichoTest™

Pharmacogenetic approach to personalize alopecia treatment in males and females

TrichoTest™ Report

Accurate and Clinically actionable results to help you make better informed decisions.

1. Drug Efficacy Panel

The report shows on a color scale which compounds the algorithm recommends.
Percentages and color scale indicate the level of efficacy of each Active Ingredient for the patient.
Medications blocked due to intolerances or contraindications are shown in red.

Anti-alopecic drugs

Prostaglandins	
• Minoxidil	89%
• Oral Minoxidil (woman)	77%
• Latanoprost Fagron	67%
• Prostaquinon TM	67%
• Oral Minoxidil (man)	

Antiandrogenic	
• 17-α Estradiol	97%
• Ginseng	78%
• Finasteride	75%
• Oral Finasteride (woman)	75%
• Saw Palmetto	53%
• Melatonin	28%
• Dutasteride	
• Oral Dutasteride	
• Oral Finasteride (man)	

Anti-inflammatory	
• Triamcinolone acetonide	
• Hydrocortisone	
• Betamethasone dipropionate	
• Desonide	
• Fluocinolone acetonide	
• Prednicarbate	

Immunomodulator	
• Tacrolimus	

Hair care supplements

Circulation	
• Arginine	100%
• Ginkgo biloba	100%
• L-Carnitine L-tartrate	78%
• Caffeine	25%
• CafeiSome TM	20%

Collagen synthesis
• Oral SiliciuMax TM
• Cystine

Insulin-like growth factor increase	
• IGrantine-F1 TM	67%
• TrichoXidil	67%

Recommendations for mesotherapy

• Minoxidil Liposomade 0,25%	89%
• Finasteride Liposomade 0,05%	75%
• Latanoprost Liposomade 0,001%	67%
• Protasquinon Liposomade 0,4%	67%
• Dutasteride Liposomade 0,01%	
• Acid Retinoic 0,1%	

Vitamin, mineral and antioxidant supplements

Vitamin deficiency	
• Vitamin D	67%
• Vitamin B9 (Folate)	67%
• Vitamin E (Tocoferol)	67%
• Vitamin B7 (Biotin)	
• Vitamin B7 (Biotin)	
• Retinol palmitate	
• Vitamin C (Ascorbic Acid)	
• Vitamin B12 (Cianocobalamin)	
• Vitamin C (Ascorbic Acid)	

Minerals	
• Iron sulfate	67%
• Magnesium Gluconate	67%
• Zinc gluconate	
• Zinc acetate	

Antioxidant	
• Resveratrol	100%
• Selenium yeast	

2. Complete Treatment approach

Topical

Oral

Mesotherapy

3. Prescription Ready

The most suitable formulations are selected considering the genetics,
the type of alopecia, and the relevant history of the patient.
All formulas have been tested and are suitable for compounding.

Topical treatment

Formula	
Prostaquinon TM	2 %
17-α Estradiol	0.05 %
Arginine	2 %
IGrantine-F1 TM	0.42 %
TrichoSol	**100ml**

Posology
Apply at night before bedtime. Leave the solution on your scalp for as long as possible. Wash your scalp the next day.

Signature of the prescribing physician	
Dr	
Physician registration No.	
Date	

Address	Signature
0 0 ,	

Oral treatment

Formula	
Oral Minoxidil (woman)	0.75 mg
Iron sulfate	33 mg
Resveratrol	250 mg
Oral Finasteride (woman)	4 mg

Posology
1 capsule per day, 90 capsules for 3 months

Signature of the prescribing physician	
Dr	
Physician registration No.	
Date	

Address	Signature
0 0 ,	

Check a Demo Report by scanning the QR.

Man report

Woman report

Fagron genomics

They work with us

Dr. Gorana Kuka-Epstein
M.D. - HAIR CENTER SERBIA
Leading hair transplantation Specialist Founder of the FoundHair Training program and the Women's Center for Hair Loss.
Diplomate of the American Board of Hair Restoration Surgery.

Dr. Philippe Ginouves
NHT EUROPE
Highly skilled plastic and reconstructive surgeon.
Focus on hair loss treatment since 1985.
World FUE Institute, ISHRS, member.

Clinical Case

Before treatment

After treatment

Case information

Male patient suffering from **androgenetic alopecia (AGA)** had been attempting treatment with minoxidil for 1 year without success. However, after undergoing a Trichotest genetic profile, it was revealed that the patient was a non-responder to minoxidil due to a specific genotype of the SULT1A1 gene. Based on this information, the patient's treatment was adjusted accordingly and he began to show improvement in hair regrowth and reduction in hair shedding. The **TrichoTest**™ proved to be a valuable tool in helping to personalize the patient's treatment plan, leading to better results and a more successful outcome.

TrichoTest™

Pharmacogenetic approach to personalize alopecia treatment in males and females

What is pharmacogenomics and what is it for?

Determine the safest, most effective treatments for patients

- Pharmacogenomics use the genetic information of a patient to study its individual response to drugs.
- Genetic variations can be associated with a particular drug response in a patient. Identifying those variations helps to target medication changes that can be safer and more effective.
- Pharmacogenomics testing allows the Doctors to make better informed decision and eventually adjust the dosage or choose a different drug.

The goal of pharmacogenomics is to develop strategies to individualize patient therapy and optimise outcomes

Personalized Medicine offers many benefits for patients:

- Optimized dosing and efficacy.
- Reduced trial and error prescribing.
- Reduced risk of ineffective medications and adverse side effects.
- Achieving desired therapeutic benefit sooner for improved patient outcomes.

What is evaluated?

	Genetic variations analized	Gene	Evaluated effect	Recommended APIs
1	**Prostaglandins and sulphotransferase**	GPR44	Activity of PGD2 receptors	Prostaquinon™
		PTGFR	Activity of PGF2a receptors	Latanoprost
		PTGES2	Activity of PTGES2 enzyme	Minoxidil
		SULT1A1	Activity of sulfotransferase	Minoxidil
2	**Anti-inflammatory drugs**	GR-alpha	Resistance to glucocorticoids therapy	Anti-inflammatory glucocorticoids & Immunomodulators
3	**Anti-androgens**	CYP19	Activity of aromatase	17α-estradiol
		SR5DA	Activity of 5α-reductase type 1 and 2	Finasteride, Dutasteride
4	**Stimulation of circulation**	ACE	Activity of angiotensin-converting enzyme	Circulation modulators
5	**Collagen syntesis**	COL1A1	Synthesis of collagen	Collagen synthesis enhancers
6	**Insulin-like growth factor**	IGFR-1	Activity of IGF-1 receptors	IGrantine-F1™
7	**Vitamins**	CRABP2	Intracellular transport of vitamin A	Retinol
		BTD	Activity of biotinidase	Vitamin B7 (biotin)
		SLC23A1	Blood Vitamin C levels	Vitamin C
		MTHFR	Folate deficit	Vitamin B9 (folate)
		GC	Vitamin D deficit	Vitamin D
		FUT2	Vitamin B12 deficit	Vitamin B12
		ZPR1	Vitamin E deficit	Vitamin E
8	**Minerals**	SLC30A3	Blood Zinc levels	Zinc (Sulfate, gluconate or acetate)
		MUC1	Blood Magnesium levels	Magnesium gluconate
		TMPRSS6	Blood iron levels	Iron sulfate
		DMGDH	Blood selenium levels	Selenium Yeast
9	**Antioxidants**	NQO1	Oxidative capability	Asthaxantin

How do we guarantee expertise, quality and service?

Fagron Genomics is **an in vitro medical device manufacturer** specializing in the **development and servicing of medical genetic algorithms**, oriented to deliver personalized treatments to patients.

Best-in Class Lab
Our proprietary laboratory has been built to perform high-volumes with accurate precision.

They Relied on us!

+65 countries | **+3,000 doctors** | **+35,000 patients**

Trustability
Our processes and documentation comply with the most widely used standards worldwide.

Infrastructure
Genetic Labs facilities with latest technology in genetics analysis operating under GLP and GCP standards.

World-wide network
Services, logistics hubs, and professional support from any location around the globe.

Quality
is at the center of our DNA

1. Cranwell and Sinclair. Male Androgenetic Alopecia. [Updated 2016 Feb 29]. In: Feingold KR, Anawalt B, Boyce A, et al., editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000
2. Price (2003) Androgenetic Alopecia in Women, Journal of Investigative Dermatology Symposium Proceedings, Volume 8, Issue 1: 24-273
3. York *et al.* (2020). Treatment review for male pattern hairloss. Expert Opinion on Pharmacotherapy 21: 603-612.
4. Shanshanwal *et al.* (2017) Superiority of dutasteride over finasteride in hair regrowth and reversal of miniaturization in men with androgenetic alopecia: A randomized controlled open-label, evaluator-blinded study. Indian J. Dermatol. Venereol. Leprol. 83: 47–54.
5. Tsunemi *et al.* (2014) Long-term safety and efficacy of dutasteride in the treatment of male patients with androgenetic alopecia. J. Dermatol. 43: 1051–1058.
6. Abdel-Raouf *et al.* (2021) A novel topical combination of minoxidil and spironolactone for androgenetic alopecia: Clinical, histopathological, and physicochemical study. Dermatol Ther. 34: e14678.
7. Rossi *et al.* (2020) Efficacy of Topical Finasteride 0.5% vs 17a-Estradiol 0.05% in the Treatment of Postmenopausal Female Pattern Hair Loss: A Retrospective, Single-Blind Study of 119 Patients. Dermatol. Pract. Concept. 10: e2020039.
8. Blume-Peytavi *et al.* (2012) A randomized double-blind placebo-controlled pilot study to assess the efficacy of a 24-week topical treatment by latanoprost 0.1% on hair growth and pigmentation in healthy volunteers with androgenetic alopecia. J. Am. Acad. Dermatol. 66, 794–800.
9. Charlesworth *et al.* (1989) Effect of cetirizine on mast cell-mediator release and cellular traffic during the cutaneous late-phase reaction. J. Allergy Clin. Immunol. 83, 905–912.
10. Rossi *et al.* (2018) A preliminary study on topical cetirizine in the therapeutic management of androgenetic alopecia. J. Dermatolog. Treat. 29, 149–151.
11. Iehlé *et al.* (1995) Human prostatic steroid 5a-reductase isoforms-A comparative study of selective inhibitors. J. Steroid Biochem. Mol. Biol. 54: 273–279.
12. Pais *et al.* (2016) Determination of the potency of a novel saw palmetto supercritical CO2 extract (SPSE) for 5a-reductase isoform II inhibition using a cell-free in vitro test system. Res. Reports Urol. 8: 41–49.
13. Wessagowit *et al.* (2016) Treatment of male androgenetic alopecia with topical products containing Serenoa repens extract. Australas. J. Dermatol. 57: e76–e82.
14. Rossi *et al.* (2016) Aromatase inhibitors induce 'male pattern hair loss' in women? Ann. Oncol. 24: 1710–1711.
15. Fischer *et al.* (2004) Melatonin increases anagen hair rate in women with androgenetic alopecia or diffuse alopecia: Results of a pilot randomized controlled trial. Br. J. Dermatol. 150: 341–345.

FG-RE-MK-002-EN V4

Fagron Genomics, S.L.U.
C/ de les Cosidores, 150
08226 Terrassa
Barcelona (Spain)
www.fagrongenomics.com

Customer Service:
+34 687876800
+34933801157
HELP@fagrongenomics.com

Fagron genomics