Vitamin D				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
GC	rs2282679 (T>G)	G	GT	Genetic result: Predisposition to slightly lower vitamin D serum level. Interpretation: Vitamin D-binding protein (GC or DBP) variants are associated with lower vitamin D serum level. Treatment/dosage: Supplementation should be considered.

Vitamin B12				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
FUT2	rs602662 (A>G)	G	AA	Genetic result: Predisposition to higher vitamin B12 serum level. Interpretation: Galactoside 2-alpha-L-fucosyltransferase 2 (FUT2) variants are associated lower vitamin B12 serum level. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with vitamin B12.

Vitamin E				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
ZPR1	rs964184 (G>C)	C	CG	Genetic result: Predisposition to slightly lower serum tocopherol levels. Interpretation: Zinc Finger Protein ZPR1 variants are associated with low serum alpha-tocopherol (vitamin E) levels. Treatment/dosage: Vitamin E supplementation should be considered.

Antioxidants

Antioxidants				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
NQO1	rs1800566 (G>A)	A	GG	Genetic result: Predisposition to normal NQO1 enzyme activity. Interpretation: NAD(P)H dehydrogenase [quinone] 1 (NQQ1) variants are associated with lower NQO1 enzyme activity and may have less effective protection against oxidative stress. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with antioxidants.

Minerals

Magnesium				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
MUC1	rs4072037 (T>C)	C	CT	Genetic result: Predisposition to intermediate magnesium serum level. Interpretation: Mucin 1, cell surface associated (MUC1) variants are associated with lower magnesium serum level. Treatment/dosage: Magnesium supplementation should be considered.

Zinc sulfate				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
SLC30A3	rs11126936 (T>G)	G	GT	Genetic result: Predisposition to higher serum zinc level. Interpretation: Solute carrier family 30 member 3 (SLC30A3) variants are associated with lower zinc blood level. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with Zinc Sulphate.

Iron				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
TMPRSS6	rs855791 (G>A)	A	TC	Genetic result: Predisposition to slightly reduced serum levels of tranferrin and iron. Interpretation: Transmembrane protease, serine 6 (TMPRSS6 or matriptase-2) variants are associated with decreased serum levels of transferrin and iron. Treatment/dosage: Supplementation should be considered.

Selenium				
Gene	**SNP (transition)**	**Activating allele**	**Patient genotype**	**Pharmacogenetic result**
DMGDH	rs921943 (T>C)	C	CT	Genetic result: Predisposition to higher selenium serum level. Interpretation: Dimethylglycine dehydrogenase (DMGDH) variants are associated with low selenium serum level. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with selenium.

V.
Methodology

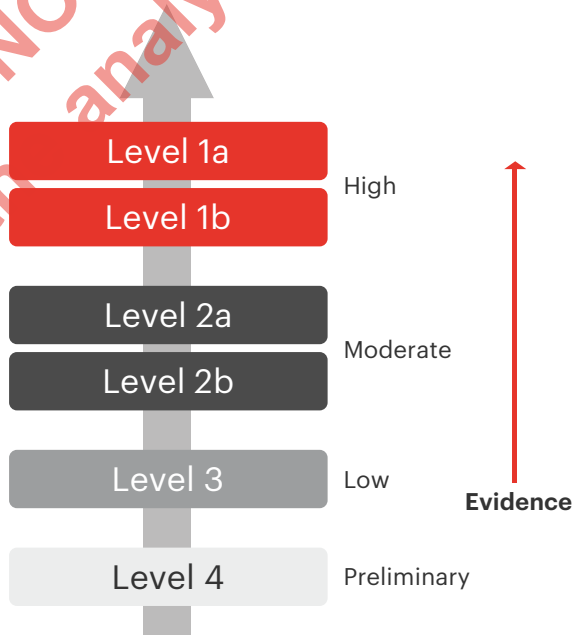
5. Methodology

How were the genetic variants studied selected and evaluated?

The **genetic test** was developed by a multidisciplinary team of medical doctors, pharmacists, geneticists, and programmers, following the highest quality standards. In particular, an expert team specialized in the curation of genetic variants reviewed each variant to ensure that selection, interpretation and impact of variants in the algorithms are based on the highest scientific evidence. Relevant patient's anamnesis (intolerances, diseases, medication, blood pressure, among others) that can affect recommendations was taken into account through medical questionnaires elaborated by health professionals.

- **Level 1A:** Annotation for a variant in medical society-endorsed or implemented in a major health system.
- **Level 1B:** Annotation for a variant where the pre-ponderance of evidence shows an association. The association must be replicated in more than one cohort with significant p-values, and prefera- bly will have a strong effect size.
- **Level 2A:** Annotation for a variant that qualifies for level 2B where the variant is within a Very Import- ant known gene, so functional significance is more likely.
- **Level 2B:** Annotation for a variant with moderate evidence of an association. The association must be replicated but there may be some studies that do not show statistical significance, and/or the ef- fect size may be small.
- **Level 3:** Annotation for a variant based on a single significant (not yet replicated) study or annotation for a variant evaluated in multiple studies but lack- ing clear evidence of an association.
- **Level 4:** Annotation based on a case report, non-significant study or in vitro, molecular or func- tional assay evidence only.

Only variants from level 1a to 2b were selected.



How was this test performed?

DNA was extracted from the buccal swab sample provided and was analyzed by our clinical analysis laboratory. DNA was extracted using the KingFisher Flex® robotic extraction system (Thermo Fisher Scientific). The study of the genetic variants was carried out using a custom-designed microfluidic card to measure for the chemilumines- cent detection of each of them using TaqMan® technology. TaqMan® technology for genotyping testing is proven and widely used in clinical and research settings. The sensitivity (detection limit) of this study is 99%.

genetic test algoritm

The **genetic test** qualitative pharmacogenetic algorithm analyzes single nucleotide polymorphisms(SNPs) associated with metabolic pathways involved in alopecia predisposition and treatment and combines thisdata with relevant patient history to predict treatmen tresponses and recommends the most appropriate activeingredients.

The **genetic test** is an in vitro diagnostic medical device developed by **Fagron Genomics** and marketed underthe CE-IVD mark in conformity with European Directive 98/79/EC and the transitional provisions (article 130) of European Regulation 2017/746.

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What are the limits of this report?

Each genetic marker tested is just one factor that predicts the likelihood of a particular outcome. However, the lifestyle, diet, and environment to which the patient is exposed may impact the expected outcomes. These external factors cannot be taken into account in this report.

The information in this report is not used to diagnose genetic diseases or abnormalities, as it does not predict the risk and likelihood of certain genetic outcomes. It is also not intended to diagnose or cure any disease. The **genetic test** is intended to assist health professionals in making patient-specific care decisions regarding the treatment or prevention of androgenetic alopecia, areata alopecia, and telogen effluvium.

Our clinical laboratory has standard and effective procedures to protect against technical and operational problems. However, problems may occur in the shipment to the laboratory or in the handling of the sample, including, but not limited to, damage to the sample, mislabeling, and loss or delay in receiving the sample. In such cases, the medical laboratory may need to request a new sample.

As with all medical laboratory tests, there is a small chance that the laboratory may provide inaccurate information.

It is the responsibility of the professional who requests a test from us to guarantee the interested party appropriate genetic counseling in accordance with Law 14/2007, of July 3, on Biomedical Research.

Fagron Genomics S.L.U. declines all responsibility derived from the use and interpretation of the results of our tests by the requesting health professional.

Fagron Genomics S.L.U. does not access data identifying the patient from whom the sample comes, so it is also the responsibility of the requesting professional to comply with the applicable data protection regulations.

VI.
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