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Dipartimento di Fisiopatologia Medico-Chirurgica e dei Trapianti
Department of Pathophysiology and Transplantation
Università degli Studi di Milano
Fondazione Policlinico, Mangiagalli, Regina Elena
Ospedale Maggiore IRCCS
MILANO (Italy)

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Mauro Barbareschi[1]
Nicola Arena (Messina)
Gilda Bevacqua (Rom)
Arianna Bianchi (Turin)
Luca Convertini (Brindisi)
Elisabetta Domaneschi (Cremona)
Gabriele Falvo (Rom)
Giuseppe Ferrauto (Pisa)
Rosetta Foglia (Parma)
Pietro Forleo (Brindisi)
Elena Ghiselli (Novara)
Marcela Guarrera (Genua)
Anna Maria Gubbini (Fano, AN)
Marco Guida (Turin)
Maria Luisa Lanfranchi (Novara)
Wilma Mazzei (Turin)
Vittoria Negri Turin)
Isabella Pia Palmieri (Messina)
Gemma Pecorari (Reggio Emilia)
Stefano Pellé (Lecce)
Nita Petronella (Ancona)
Emanuela Pretto (Parma)
Stefania Robotti (Novara)
Alessandro Salvati (Viareggio, LU)
Claudia Simoncini (Fabriano, AN)

Dott. Mauro Barbareschi

Dipartimento di Fisiopatologia
Medico-Chirurgica e dei Trapianti
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SUMMARY

The aim of the paper has been to study during a period of six month, the efficacy and the tolerability of both the serum and shampoo (Timosint®/Thymuskin®) containing synthetic low molecular weight thymus peptides (GKL-02 Factor), in the initial phases of androgenetic alopecia (AGA), and chronic telogen effluvium (TE). 364 patients (men and women) have been enrolled and divided in following groups:
- 70 men (mean age 30.72 years) with AGA;
- 57 men (mean age 35.86 years) with chronic TE;
- 53 women (mean age 42.07 years) with AGA;
- 184 women (mean age 36.94 years) with chronic TE.

Methods:
The treatment schedule was as follows:
- serum: once a day application for a total period of treatment of 24 weeks;
- shampoo: three times/week during the study period of 24 weeks.
All the subjects underwent pull test, evaluation of symptoms (seborrhea, erythema and pruritus). Tolerability and cosmetic acceptance/tolerance were evaluated after 180 days of treatment.

Results:
Men: *In AGA patients the improvement of pull test has been of 94% with a mean symptoms improvement of 89%; In TE patients the improvement of pull test has been of 98% with a mean symptoms improvement of 77%.*
Women: *In AGA patients the improvement of pull test has been of 98% with a mean symptoms improvement of 95%; In TE patients the improvement of pull test has been of 99% with a mean symptoms improvement of 95%.*
In all groups the tolerability was referred as positive in 100% of cases and no side effects were recorded. The cosmetic acceptance/tolerance was also referred as positive in 98% of the cases.

Conclusion:
In conclusion, synthetic thymus peptides showed significant efficacy and tolerability in the clinical treatment of initial AGA and chronic TE in men and women after a six month-treatment.

KEY WORDS: Androgenetic alopecia and telogen effluvium (TE) in men and women; Synthetic thymus peptides; Therapy.

INTRODUCTION

Telogen effluvium (TE) and androgenetic alopecia (AGA) constitute the main dysfunctions of the hair which require the intervention of a dermatologist. AGA is a very diffuse condition which affects both men and women.

In the initial stages, it is noticeable as a thinning of the hair which can be associated with inflammation symptoms (erythema/dandruff) [1-4].
Chronic TE is a disorder which almost exclusively affects women and is caused by various factors;

it is characterized by severe hair loss (more than 100 hairs per day) and can be associated with a chronic inflammatory condition[5-9].

In case of initial stage AGA, the aim of the therapy is to slow down the development of follicle shrinking, while in the case of TE, it is a quick improvement of the number of lost hair. In both situations, it is necessary to control the inflammatory symptoms. The clinical effect of thymus peptides on AGA as well as on chronic TE has been assessed in a previous study after a period of three and six months in female patients[10,11].

In the light of the positive data obtained, it was deemed useful to carry out another study with a duration of six months in order to:
a) confirm the results in female patients;
b) evaluate the effects on male patients.

The thymus peptides used in this study are synthetic (GKL-02 Factor) and therefore do not entail the risks associated with the extraction from animals.
In addition, small tetra-peptide fractions with a low molecular weight were produced in order to improve the absorption and increase the biological effectiveness[12].

Objective

The aim of this clinical study is to test the effects of a serum based on synthetic thymus peptides* in the treatment of hair loss and for the stimulation of hair growth.

Materials and Methods

Study population
364 patients (male and female) were included which were affected by disorders of the hair, namely chronic TE and AGA in an early stage.

The first group consisted of 70 male patients aged between 17 and 56 years with an average age of 30.73 years and initial-stage AGA.

The second group consisted of 57 male patients aged between 18 and 59 years with an average age of 35.86 years and chronic TE (duration of more than six months).

The third group consisted of 53 female patients aged between 18 and 76 years with an average age of 42.07 years and initial-stage AGA.

The fourth group consisted of 184 female patients aged between 16 and 65 years with an average age of 36.94 years and chronic TE (duration of more than six months).

Exclusion criteria
- patients who are younger than 16 and older than 76 years
- pregnant and breast-feeding patients
- patients with severe systemic diseases
- patients who are being treated with special pharmaceuticals and/or cosmetics
- patients with known allergies against one of the components of the product.

Dose and administration
The patients were instructed to:
- apply the serum once per day in an amount of 2ml over the entire study period;
- wash their scalp and hair 3 times per week with the shampoo based on synthetic thymus peptides**.

EVALUATION PARAMETERS

Effectiveness

The clinical evaluation was performed using the pull test, a method which is normally used in ambulant treatment and for which the following scale is applied according to literature[13]:
- grade 1 = neg. (1-2 hairs);
- grade 2 = pos. + (3-4 hairs);
- grade 3 = pos. ++ (5-6 hairs ;
- grade 4 = pos. +++ (> 6 hairs).

*Timosint®/Thymuskin® Lozione, Biocure (Milano) ** Timosint®/Thymuskin® Shampoo, Biocure (Milano)

After 180 days of treatment, the physician expressed an opinion according to the scheme indicated below in order to demonstrate the level of improvement:

- **Very good:** improvement of the pull test by 3 levels.
- **Good:** improvement of the pull test by 2 levels.
- **Sufficient:** improvement of the pull test by 1 level.
- **Poor:** Stable or worse result of the pull test.

Erythema, seborrhoea
The results were evaluated using the following scores:
- Score 1: neg.
- Score 2: pos. +
- Score 3: pos. ++
- Score 4: pos. +++

with the aim to identify the % of improvement after 180 days of treatment.

The patients were rated as:
a) improved, if a lower score was determined;
b) unvaried, if the same score was maintained;
c) worsened, if a higher score was determined.

Pruritus
The evaluation was based on the following grading:
- neg. = no pruritus;
- pos. + = slight pruritus;
- pos. ++ = moderate pruritus;
- pos. +++ = intense pruritus.

Tolerance
This evaluation was based on the following grading:
Very good, Good, Sufficient, Poor.

Cosmetological satisfaction
At the end of the treatment, the investigator asked the patients for their opinion on their cosmetological satisfaction using the following grading:
Very good, Good, Sufficient, Poor.

Results and discussion

Group of male patients with AGA
Number 70 - average age 30.72 years

Pull test
After 180 days of treatment, there was an improvement of the pull test in 66 out of 70 patients (94%) (figure 1).

Seborrhoea, erythema, pruritus
After 180 days of treatment, the following results were documented:

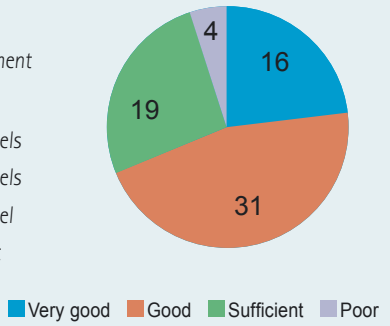
a) seborrhoea had improved in 89% of the patients;
b) erythema had improved in 90% of the patients (figure 2);
c) pruritus was gone in 58 out of 70 patients and slightly present in the remaining 12 (figure 3).

Group of male patients with TE
Number 57 - average age 35.86 years

Pull test
After 180 days of treatment, there was an improvement of the pull test in 56 out of 57 patients (98%) (figure 4).

Figure 1
Men with 1st stage AGA.
Number of patients where there was an improvement of the pull test with the following grading:

Very good: *improvement of the pull test by 3 levels*
Good: *improvement of the pull test by 2 levels*
Sufficient: *improvement of the pull test by 1 level*
Poor: *Stable or worse result of the pull test*
after 180 days of treatment



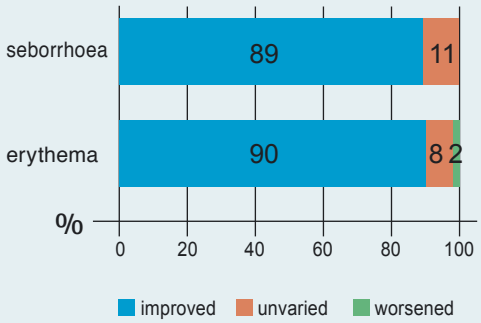


Figure 2
Men with AGA. Patients (%) with an improvement, without any change, with worsening after 180 days of treatment

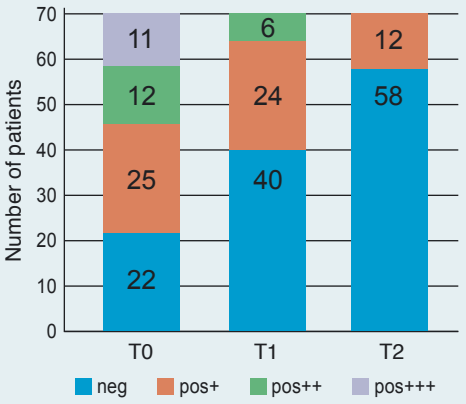


Figure 3
Men with AGA.
Number of patients in whom the results for pruritus were as follows:
neg. = no pruritus
pos. + = slight pruritus
pos. ++ = moderate pruritus
pos. +++ = intense pruritus
at the times T0, T1 (90 days), T2 (180 days).

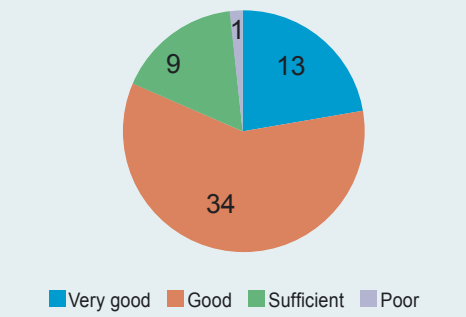


Figure 4
Men with TE.
Number of patients where there was an improvement of the pull test with the following grading:

Very good: *improvement of the pull test by 3 levels*
Good: *improvement of the pull test by 2 levels*
Sufficient: *improvement of the pull test by 1 level*
Poor: *Stable or worse result of the pull test after 180 days of treatment*

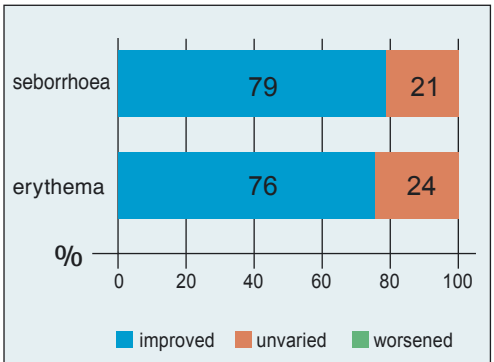


Figure 5
Men with TE. Patients (%) with an improvement, without any change, with worsening after 180 days of treatment.

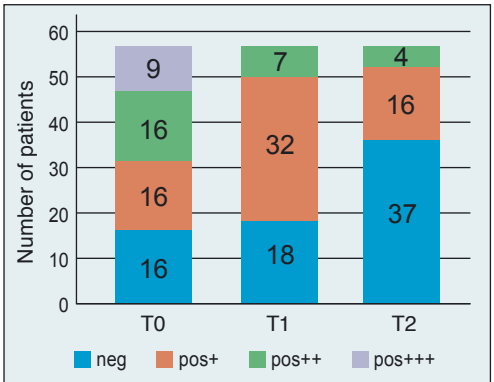


Figure 6
Men with TE.
Number of patients in whom the results for pruritus were as follows:
neg. = no pruritus
pos. + = slight pruritus
pos. ++ = moderate pruritus
pos. +++ = intense pruritus
at the times T0, T1 (90 days), T2 (180 days).

Seborrhoea, erythema, pruritus
After 180 days of treatment, the following results were documented:
a) seborrhoea had improved in 79% of the patients;
b) erythema had improved in 76% of the patients (figure 5);
c) pruritus was gone in 37 patients, slightly present in 16 and moderate in 4 (figure 6).

Group of female patients with AGA
Number 53 - average age 42.07 years

Pull test
After 180 days of treatment, there was an improvement of the pull test in 52 out of 53 patients (98%) (figure 7).

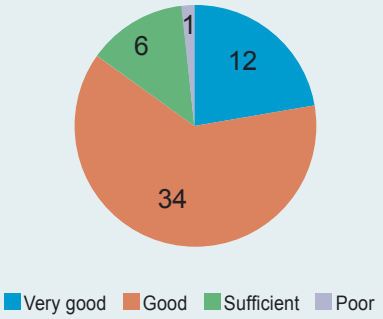


Figure 7
Women with AGA.
Number of patients where there was an improvement of the pull test with the following grading:

Very good: *improvement of the pull test by 3 levels*
Good: *improvement of the pull test by 2 levels*
Sufficient: *improvement of the pull test by 1 level*
Poor: *Stable or worse result of the pull test*
after 180 days of treatment

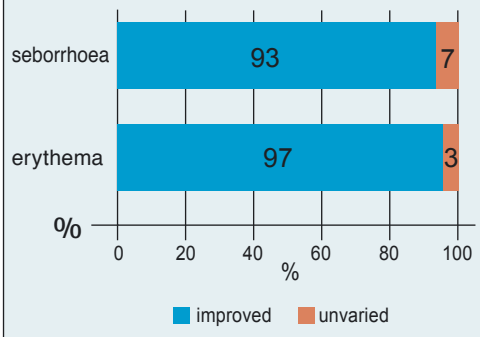


Figure 8
Women with AGA.
Patients (%) with an improvement, without any change, with worsening after 180 days of treatment

Seborrhoea, erythema, pruritus
After 180 days of treatment, the following results were documented:
a) seborrhoea had improved in 93% of the patients;
b) erythema had improved in 97% of the patients (figure 8);
c) pruritus was gone in 44 out of 53 patients and slightly present in the remaining 9 (figure 9).

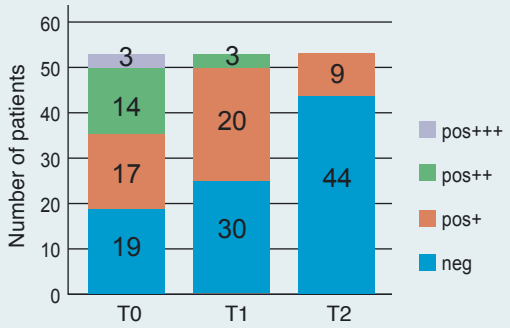


Figure 9
Women with 1st stage AGA.
Number of patients in whom the results for pruritus were as follows:
neg. *= no pruritus*
pos. + *= slight pruritus*
pos. ++ *= moderate pruritus*
pos. +++ *= intense pruritus*
at the times T0, T1 (90 days), T2 (180 days).

Group of female patients with TE
Number 184 - average age 36.94 years

Pull test
After 180 days of treatment, there was an improvement of the pull test in 182 out of 184 patients (99%) (figure 10).

Seborrhoea, erythema, pruritus
After 180 days of treatment, the following results were documented:
a) seborrhoea had improved in 93% of the patients;
b) erythema had improved in 97% of the patients (figure 11);
c) pruritus was gone in 161 patients, slightly present in 20 and moderate in 3 (figure 12).

Tolerance and cosmetological satisfaction
The investigator assessed the tolerance as follows:
a) very good in 50% of the patients;
b) good in 42% and sufficient in 7%.

No side effects were recorded as a result of which the treatment was stopped (figure 13).
The cosmetological satisfaction of the patients was graded as follows:
a) very good in 45% of the patients;
b) good in 43%;
c) sufficient in 10% and poor in 2% (figure 13).

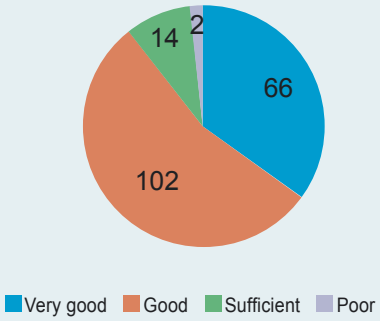


Figure 10
Women with TE.
Number of patients where there was an improvement of the pull test with the following grading:

Very good: *improvement of the pull test by 3 levels*
Good: *improvement of the pull test by 2 levels*
Sufficient: *improvement of the pull test by 1 level*
Poor: *Stable or worse result of the pull test after 180 days of treatment*

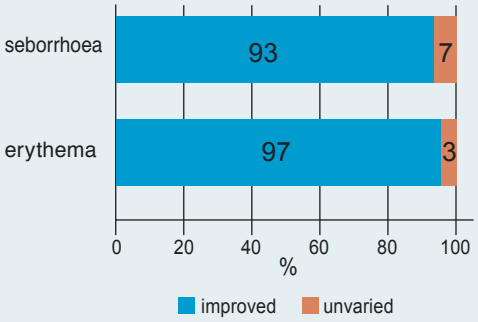


Figure 11
Women with TE.
Patients (%) with an improvement, without any change, with worsening after 180 days of treatment

Figure 12
Women with TE.
Number of patients in whom the results for pruritus were as follows:
neg. *= no pruritus*
pos. + *= slight pruritus*
pos. ++ *= moderate pruritus*
pos. +++ *= intense pruritus*
at the times T0, T1 (90 days), T2 (180 days).

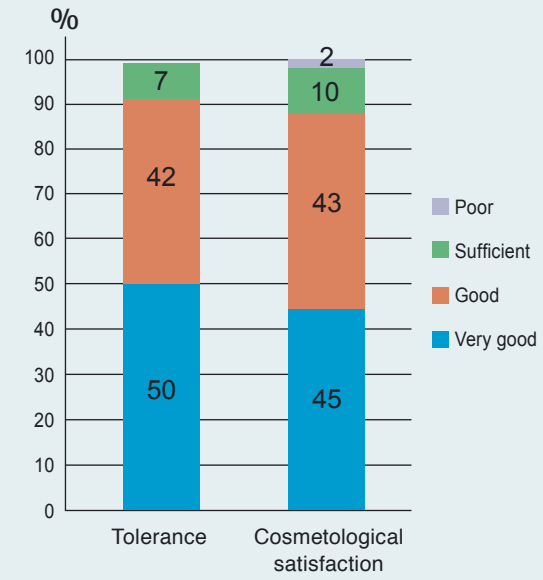


Figure 13
Patients in total (364).
Tolerance:
Assessment of the investigator at the end of the treatment.
Cosmetological satisfaction:
Opinion of the patients at the end of the treatment.

Conclusions

The purpose of the study was to assess the effectiveness and tolerance of a product based on synthetic thymus peptides (GKL-02 Factor), natural active ingredients (caffeine, vitamin E, urtica dioica) and cosmetic ingredients (panthenol and plant proteins) for two clinical situations: AGA in an early stage and chronic TE, which often occur together with inflammation symptoms.
The aim of the treatment in these cases was to slow down the follicle shrinking (AGA) and achieve a quick improvement of the hair loss (TE).
As both situations are often associated with an inflammation condition, it is necessary that the treatment is able to control these symptoms.
The product used in the study is indicated for both of these conditions for the following reasons:

1) Synthetic thymus peptides (GKL-02 Factor):

a) stimulate the growth of keratinocytes;

b) provide the amino acids which are required for the growth of keratin;

c) strengthen the skin's own defence system [4, 14-16].

2) Natural substances (vitamin E, caffeine, urtica dioica):

a) support the production of energy needed for the growth of the hair;

b) improve the micro-circulation of the skin;

c) neutralize the toxic effects of free radicals [17].

3) Cosmetic ingredients (plant proteins and panthenol):

make the hair flexible, shiny and easy to comb.

The GKL-02 Factor is made of di, tri- and tetra-peptides which are characterized by a low molecular weight and are obtained synthetically and not by means of extraction from animal tissue.

The average molecular weight of the individual peptide complexes varies between 180 and 600 daltons and thus facilitates the penetration through the follicle after local application.

The assessment of the product was performed for female as well as male subjects examining tolerance and cosmetological properties in addition to its effectiveness.

The data collected from the female subjects showed an improvement of the pull test in 98% of the AGA cases and in 99% of the TE cases, thus confirming the positive data obtained in the two previous studies [10,11].

The data collected from the male subjects, which showed an improvement of the pull test in 94% of the AGA cases and in 98% of the TE cases, confirm the usefulness of the product for men as well.

The improvement of the erythema, the seborrhoea and the pruritus which was documented in both sexes and for both conditions demonstrates the effect of the product on the inflammation process in the skin and on the production of sebum.

The positive data with respect to tolerance and cosmetological satisfaction confirm a very good compliance on the part of the patients.

This is a crucial element when the therapy continues over a longer period of time as in these cases.

In conclusion, the experience with this formulation for chronic TE and AGA in an early stage (for both sexes) showed that it is possible to achieve a good clinical reaction with a slowdown of the hair loss and a stimulation of hair growth.

Erythema, pruritus and seborrhoea, which often accompany these conditions, are symptoms which are improved as well by the treatment.

The indicated cosmetological properties and the very good tolerance make it a product which is suitable for therapies which continue over longer periods of time and patients who tend to skin irritations.

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Imprint

Vita-Cos-Med Klett-Loch GmbH
Röntgenstraße 11
67304 Eisenberg, Germany
Tel.: +49 (0)621 - 71482-0
info@thymuskin.de

General Manager:
Caroline Klett-Loch
Marketing & Sales:
Jan Körting

www.thymuskin.de
www.thymrevit.de
www.phytoskin.de

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Bovine-free
thymic peptides
FREE

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