
Follicusan™ DP



Prevents accelerated
Hair Loss



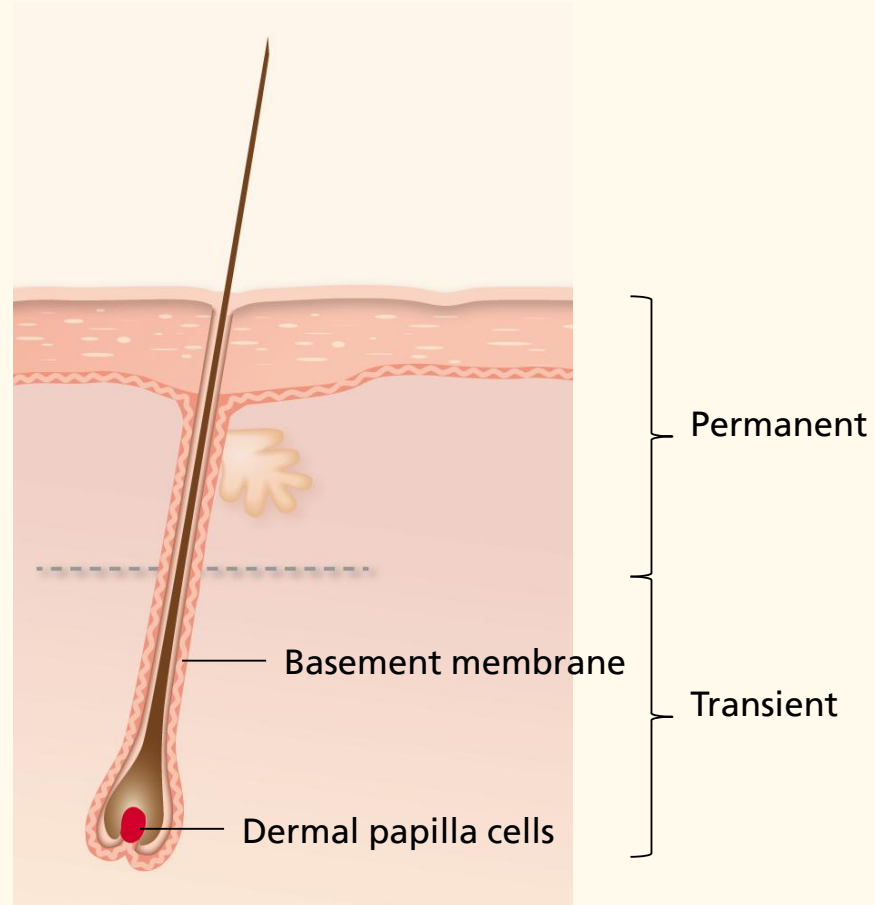
Introduction

- Milk based bioactive signaling molecules
- DL-Ethylpanthenol
- Inositol
- Sulfur-rich amino acids
(N-acetyl-Cysteine, N-acetyl-Methionine)

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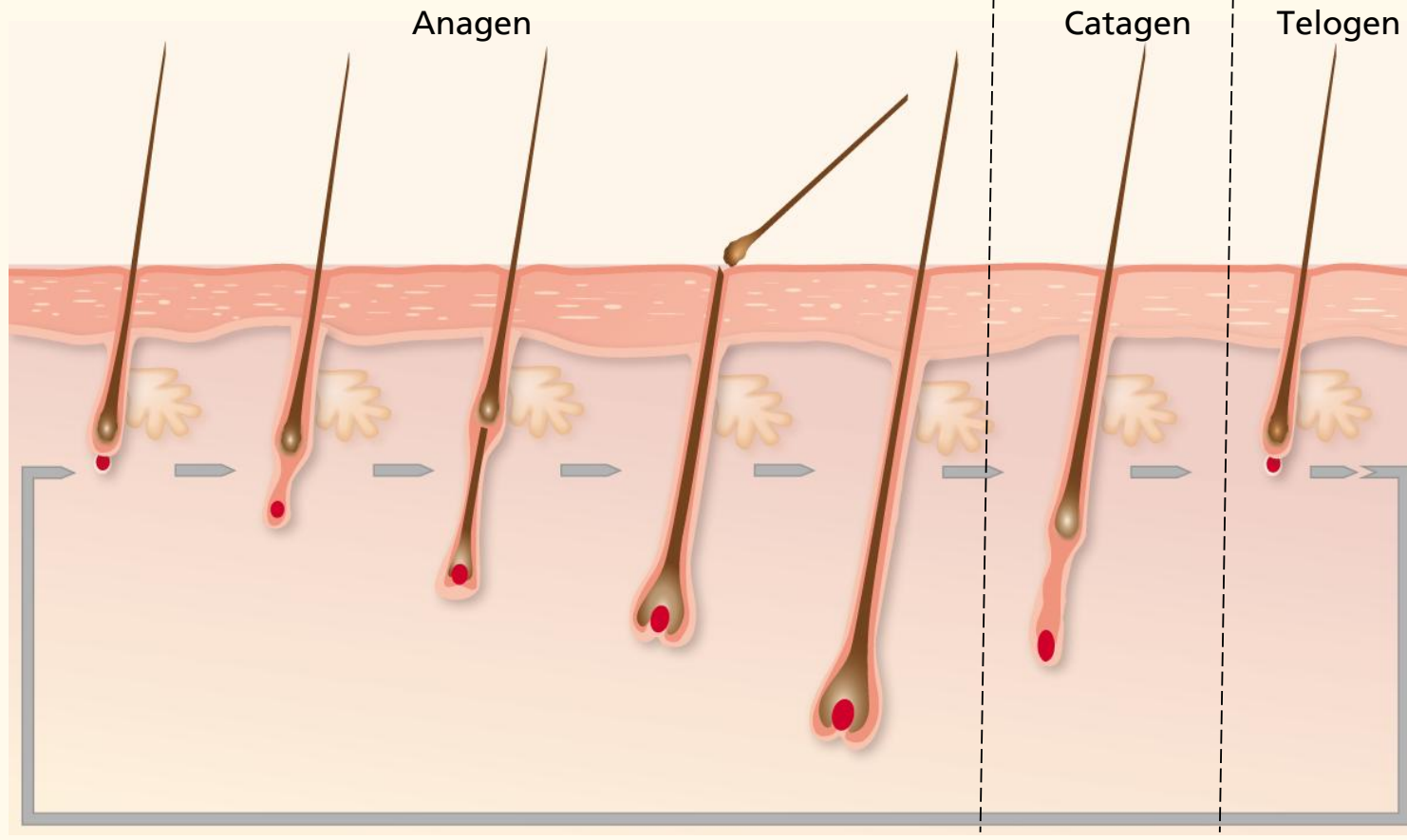
Hair Follicle



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Hair Growth Cycle



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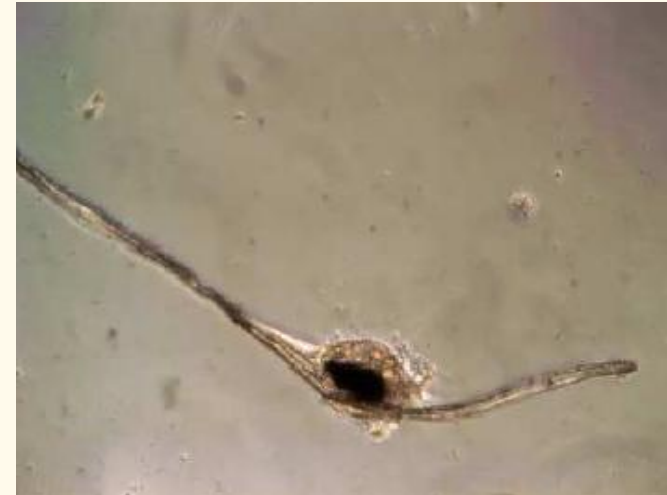
Dermal Papilla Cells: essential for hair follicle development in the hair growth cycle

DP cells are highly specialized fibroblasts with multiple roles:

- scaffold for hair follicle
- cell signaling: activation of stem cells; downward growth of the hair follicle's epithelial part
- production of surrounding connective tissue

DP cells in Alopecia Androgenetica:

- decreased formation of connective tissue
- loss of proliferation capacity



DP cells in cell culture:

In vitro self-aggregating behavior under the influence of Follicusan™ DP. Key to induction of hair follicle development.

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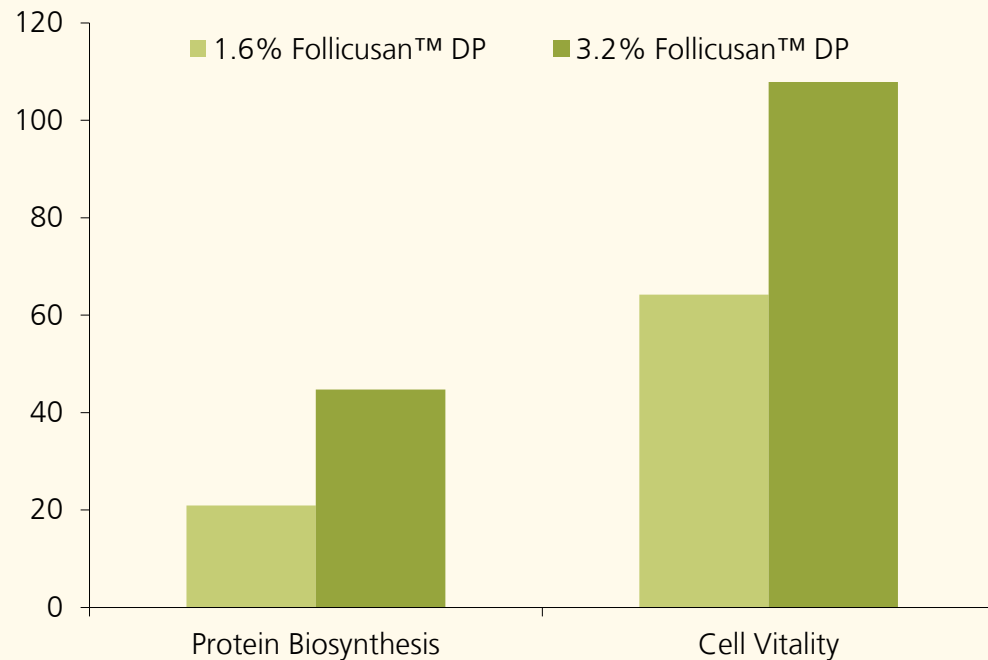
In vitro Test Results



Stimulation of Protein Biosynthesis and Cell Vitality

Stimulation of Protein Biosynthesis and Cell Vitality (%)

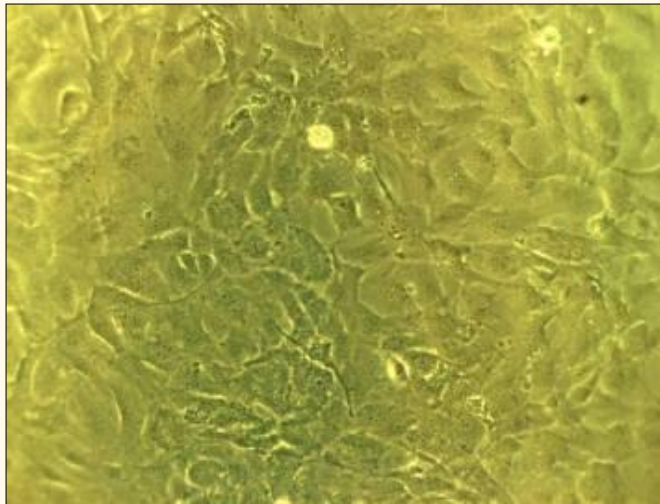
Protein biosynthesis has been measured by Crystal Violet assay, cell vitality by MTT assay on fibroblast cells related to untreated cells.



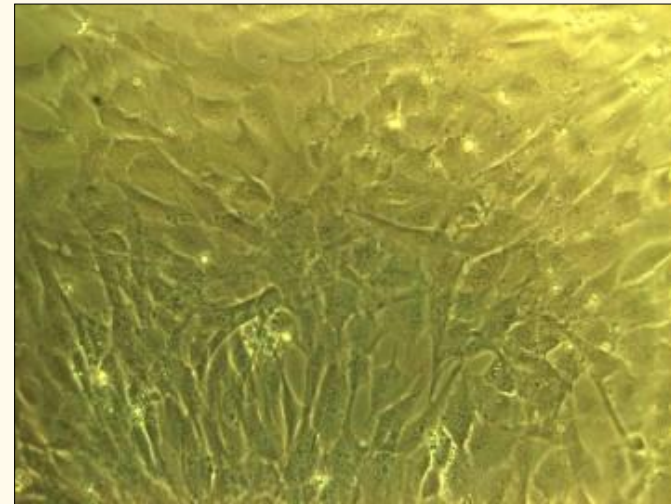
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Stimulation of ECM Synthesis in Fibroblast Cells



Control



with 6.4% Follicusan™ DP

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In vitro Test Results
Dermal Papilla Cells

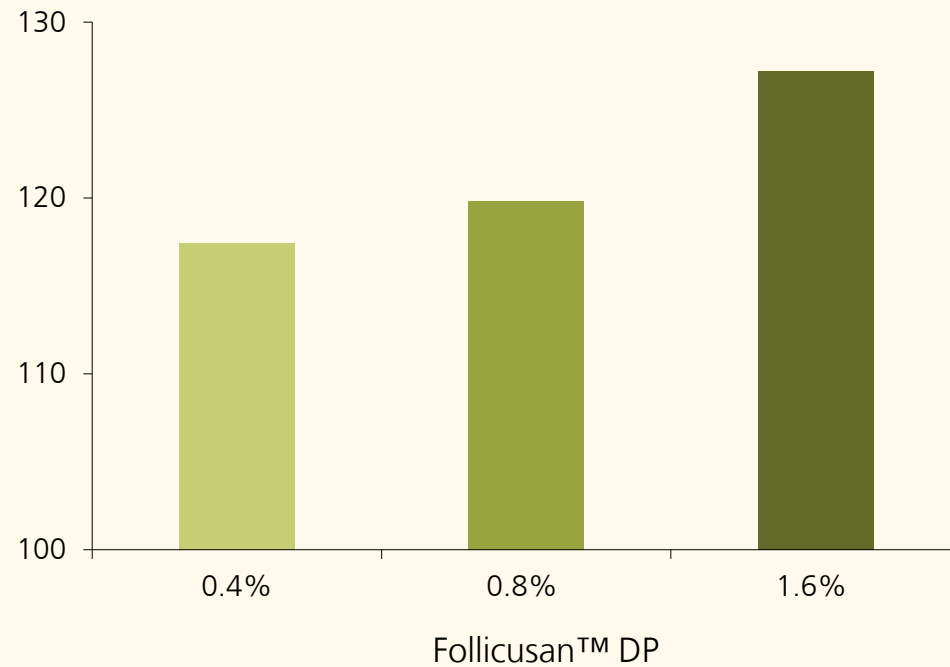


Influence on ATP Content

ATP content (%)

Measured 48h after application of Follicusan™ DP in dermal papilla cells related to the ATP level in untreated cells (100%).

(Method: luciferase/luciferin assay)



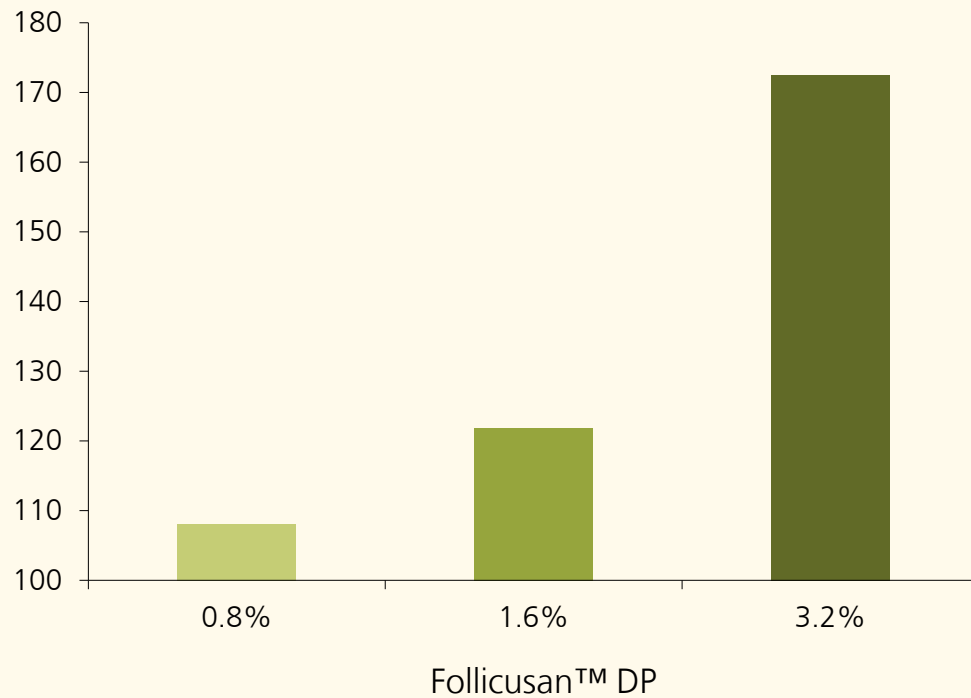
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Stimulation of Proliferation

Stimulation of proliferation (%)

Human dermal papilla cells were grown under optimal conditions for 72 h. A BrdU assay was performed after another 72 h after application of different concentrations of Follicusan™ DP. Results are related to the proliferation in untreated cells (100%).



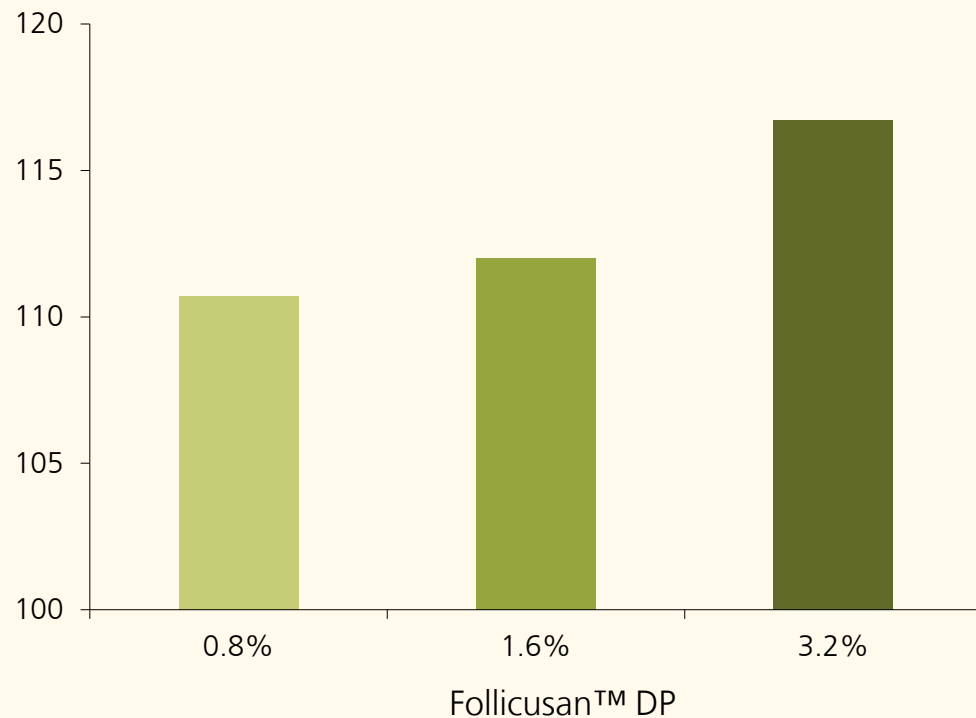
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Stimulation of Collagen Type IV Biosynthesis

Collagen type IV content (%)

Human dermal papilla cells were grown under optimal conditions for 72 h. A Type IV Collagen ELISA was performed after another 216 h after application of different concentrations of Follicusan™ DP. Results are related to the Collagen content in untreated cells (100%).



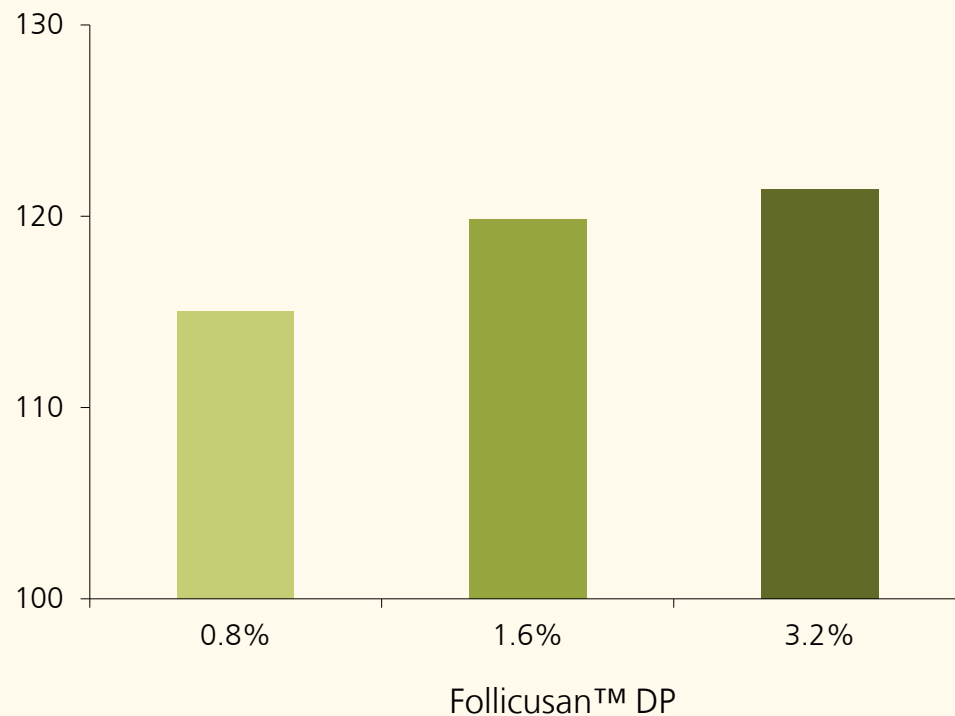
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Stimulation of Heparan Sulfate Proteoglycan Biosynthesis

Synthesis of Heparan Sulfate Proteoglycan (%)

Human dermal papilla cells were grown under optimal conditions for 72 h. A Heparan Sulfate Proteoglycan ELISA was performed after another 216 h after application of different concentrations of Follicusan™ DP. Results are related to the Heparan Sulfate Proteoglycan content in untreated cells (100%).



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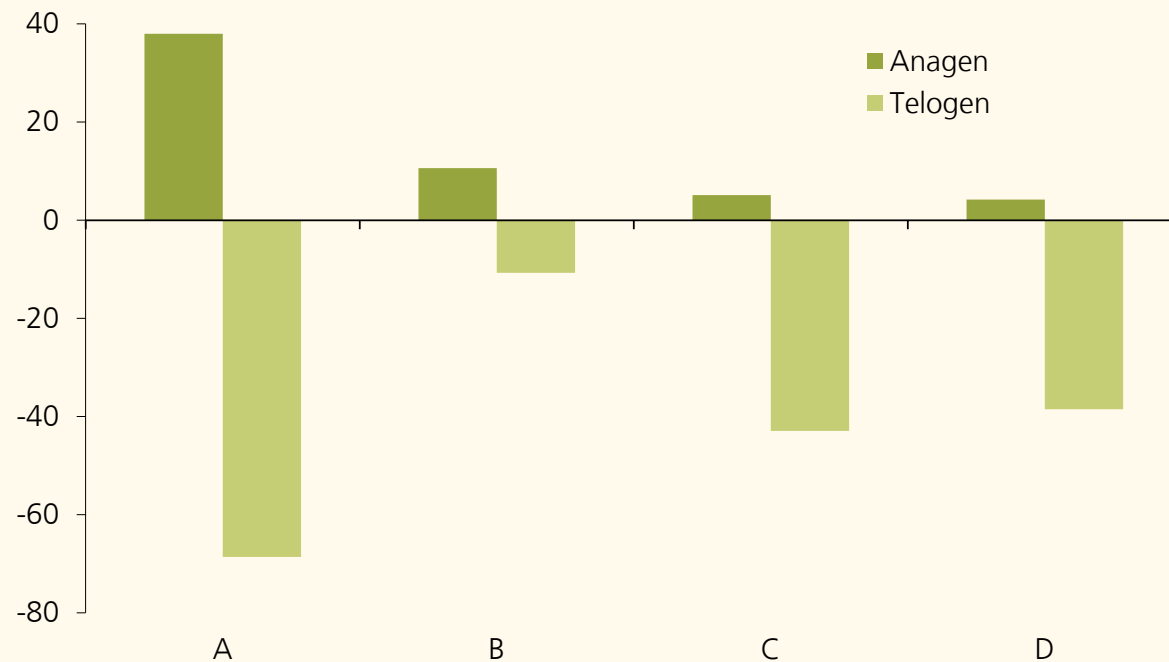
In vivo Test Results
Trichogram Technique



Influence on *Alopecia diffusa*

Changes in hair growth cycles (%)

after 3 months of treatment with a formulation containing 5% Follicusan™ DP. Trichograms were taken from volunteers (A, B, C, D) to determine the stage of hair growth cycle.



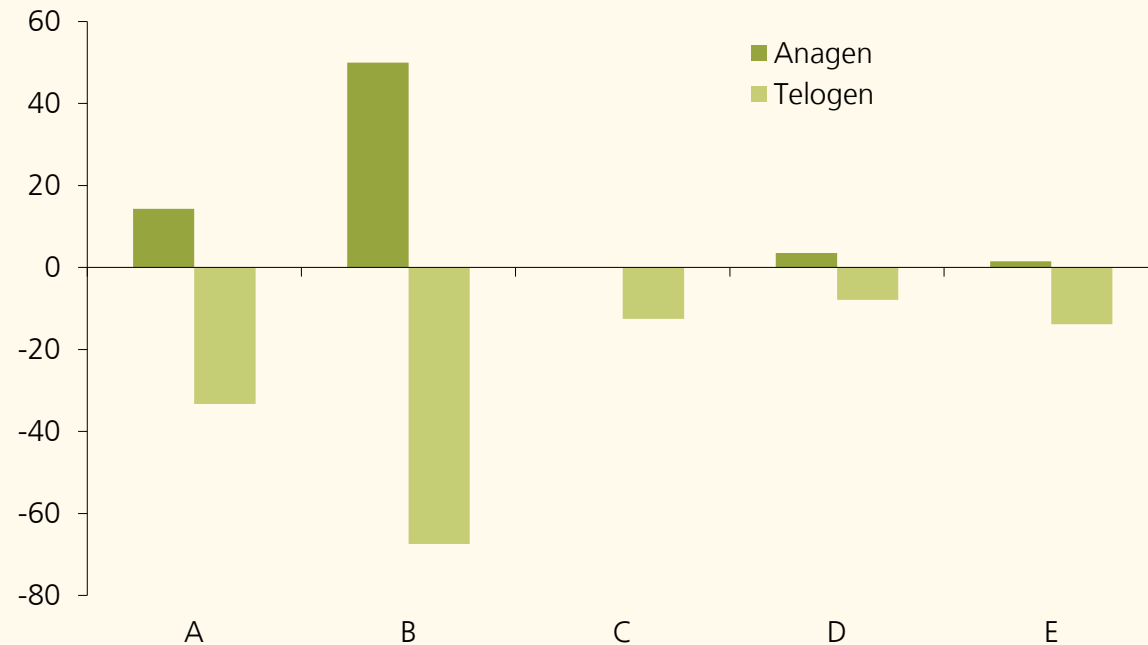
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Influence on *Alopecia androgenetica*

Changes in hair growth cycles (%)

after 3 months of treatment with a formulation containing 5% Follicusan™ DP. Trichograms were taken from volunteers (A, B, C, D, E) to determine the stage of hair growth cycle.



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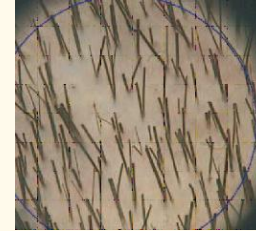
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In vivo Test Results
TrichoScan



TrichoScan

- A small area of hair is clipped on the scalp surface (~ 1.8 cm²)
- After 3 days dye is applied to this area
- Grown hair and not yet grown hair are visualized by high contrast
- Anagen hair grows 0.3 mm/ day, telogen hair shows no active growth
- Digital image at approx. 20-fold magnification is taken
- Total hair number is calculated, as well as hair thickness and percentage in anagen/telogen ratio



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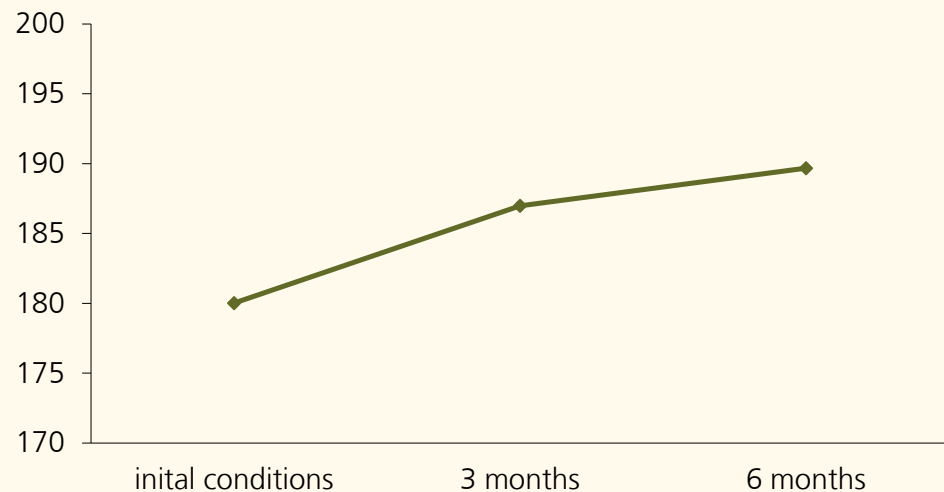


Influence on Hair Density

Hair density [1/cm²]

TrichoScans were made from 24 female volunteers suffering from Alopecia androgenetica. A formulation with 5% Follicusan™ DP was applied on the scalp twice daily .

Standard healthy hair density ~ 240/cm²



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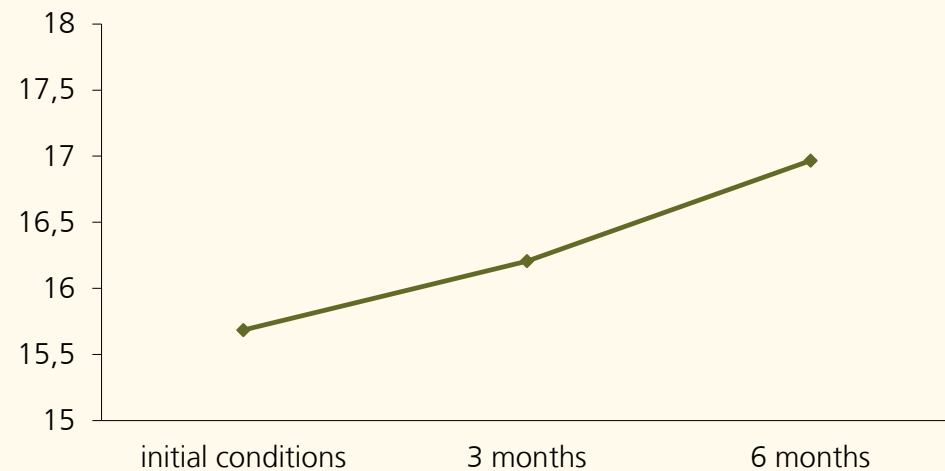


Influence on Cumulative Hair Thickness

Cumulative hair thickness [mm/cm²]

TrichoScans were made from 24 female volunteers suffering from Alopecia androgenetica. A formulation with 5% Follicusan™ DP was applied on the scalp twice daily.

A healthy hair is 0.1 mm thick, with a density of ~240/cm², the cumulative hair thickness is ~24 mm/cm².



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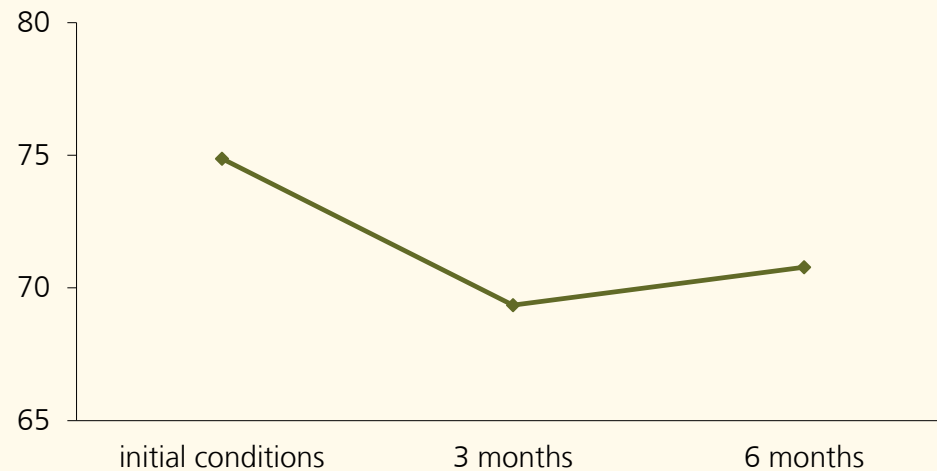


Influence on Anagen Hair Rate

Anagen rate [%]

TrichoScans were made from 24 female volunteers suffering from Alopecia androgenetica. A formulation with 5% Follicusan™ DP was applied on the scalp twice daily.

Standard healthy percentage of hair in anagen phase ~ 85%.



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Summary

- Prevents functional disorders of scalp and follicle cells through vitalization
- Stimulates proliferation and ECM synthesis of human dermal papilla cells
- Stops the progression of *Alopecia androgenetica* in women



INCI Name: Water, Alcohol Denat., Panthenyl Ethyl Ether, Milk Protein, Lactose, Inositol, Acetyl Cysteine, Acetyl Methionine, Sodium Citrate, Citric Acid

Dosage: 3.0 - 5.0%

pH-range: > 5.8

Preservation: preserved with phenoxyethanol and dehydracetic acid (Na salt)

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