
Folicusan™ DP



Prevents accelerated
Hair Loss

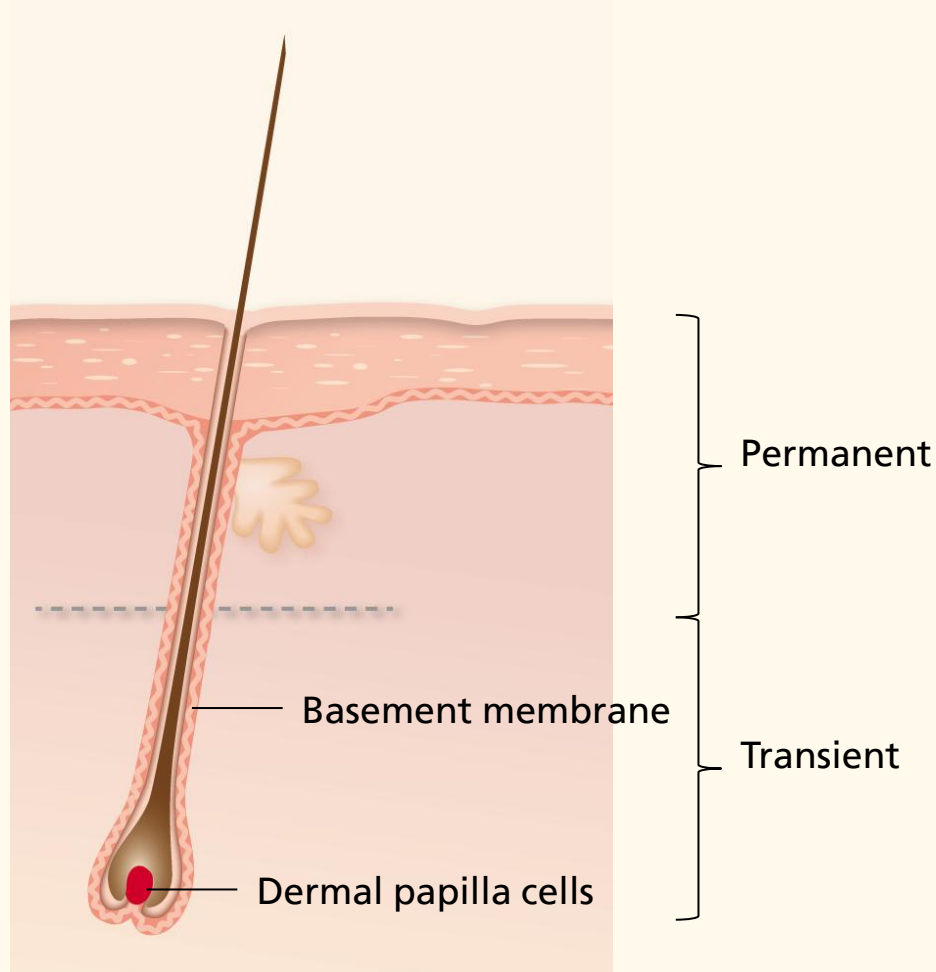


Introduction

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



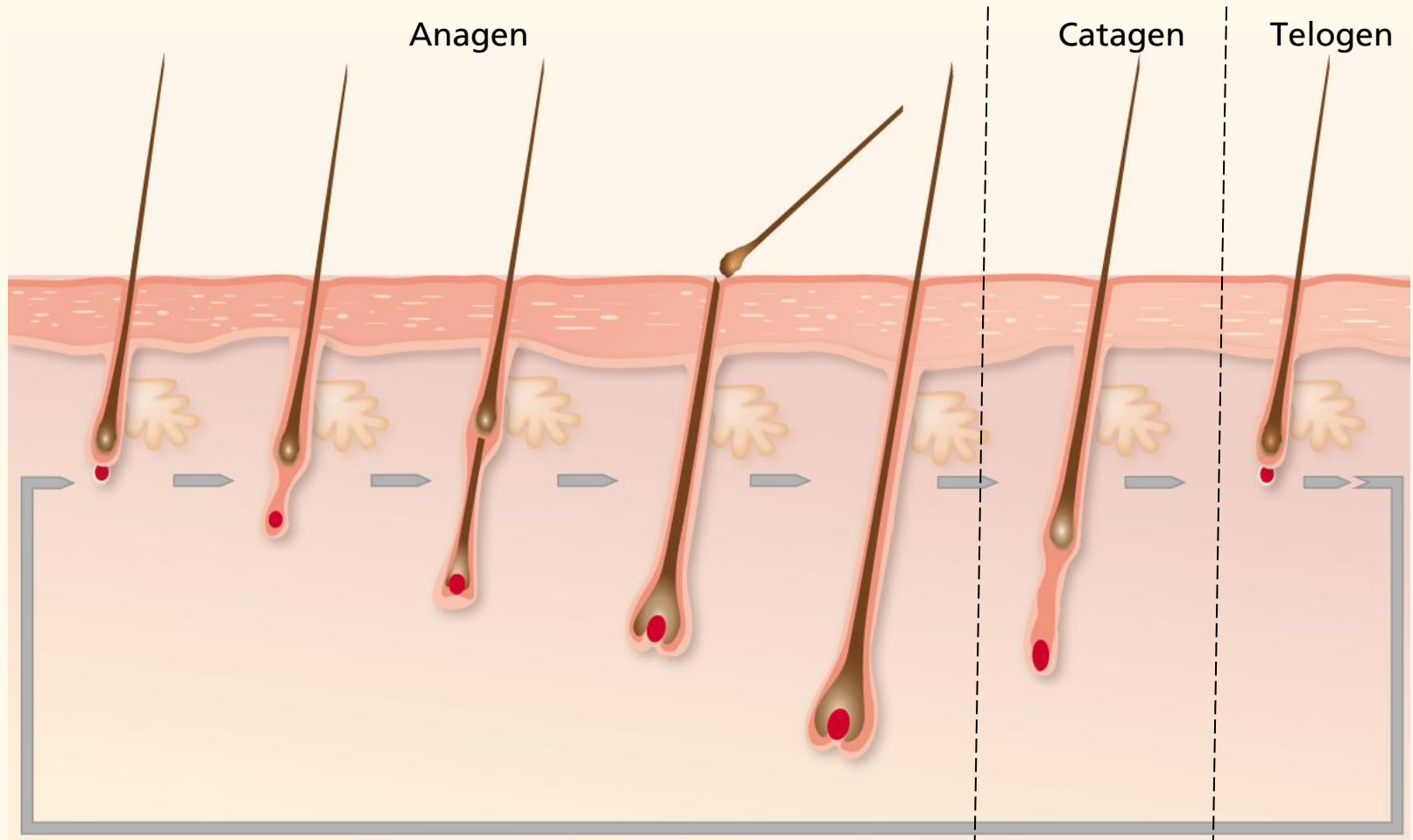
Hair Follicle



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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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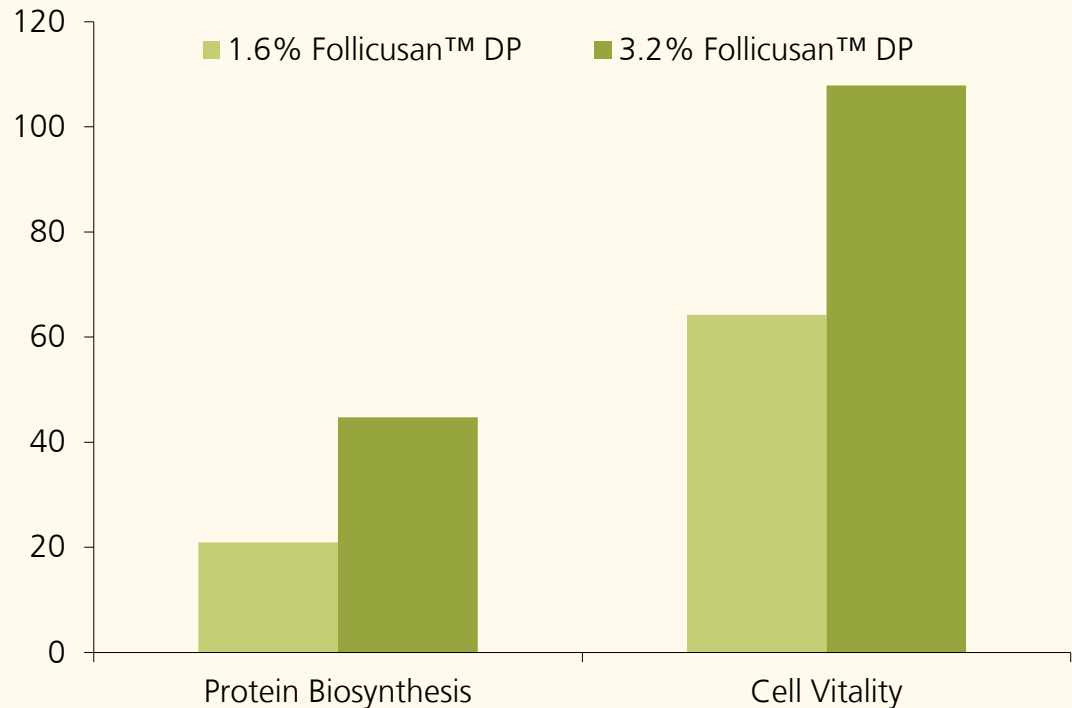
In vitro Test Results



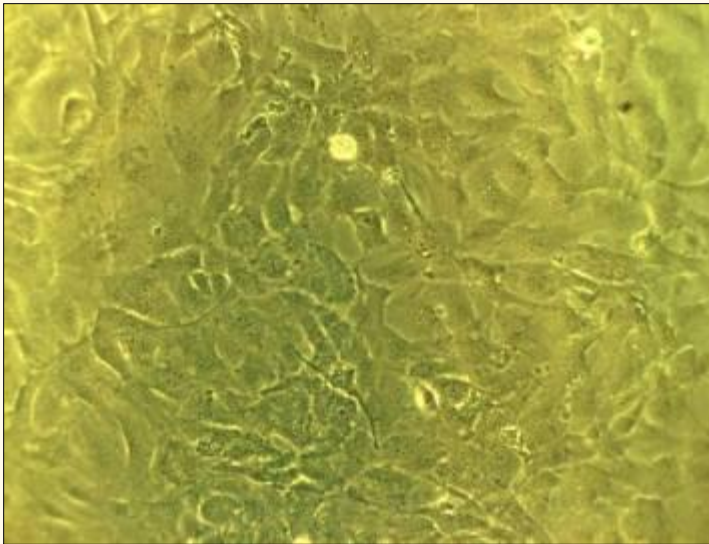
Stimulation of Protein Biosynthesis and Cell Vitality

Stimulation of Protein Biosynthesis and Cell Vitality (%)

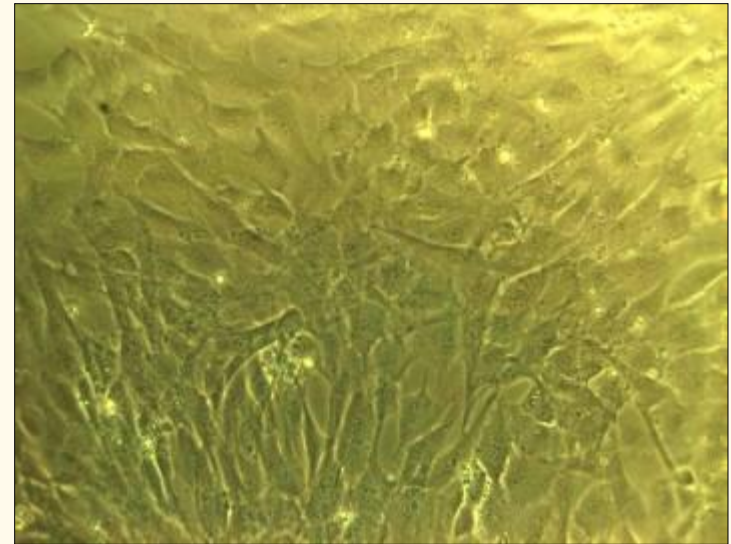
Protein biosynthesis has been measured by Crystal Violet assay, cell vitality by MTT assay on fibroblast cells related to untreated cells.



Stimulation of ECM Synthesis in Fibroblast Cells



Control



with 6.4% Follicusan™ DP



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In vitro Test Results
Dermal Papilla Cells

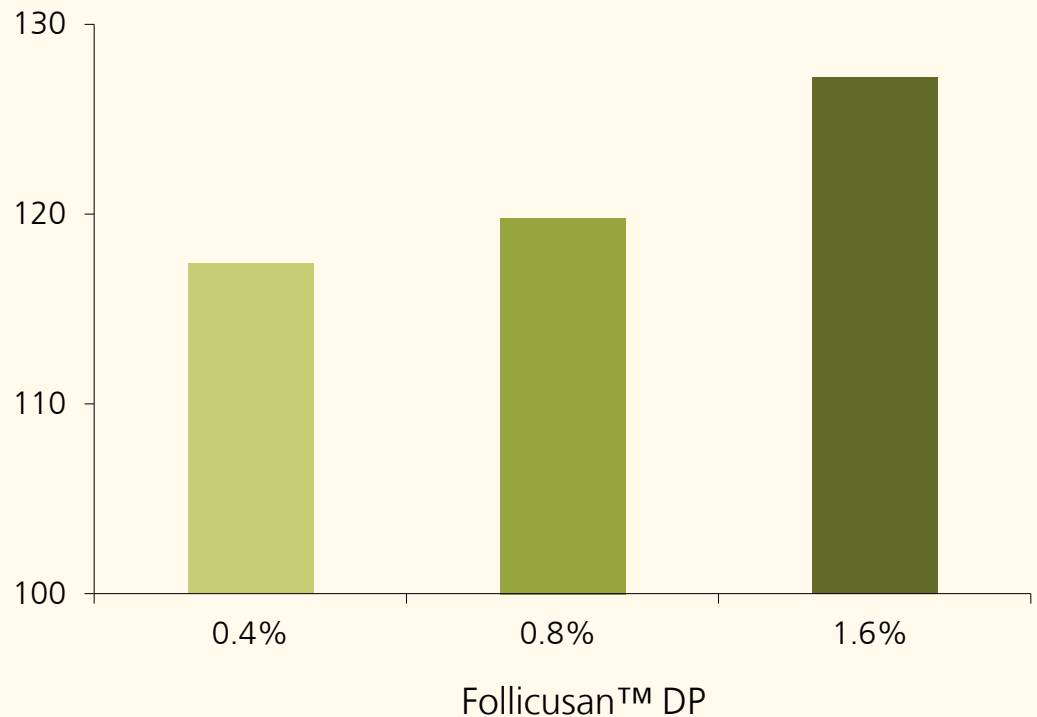


Influence on ATP Content

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)



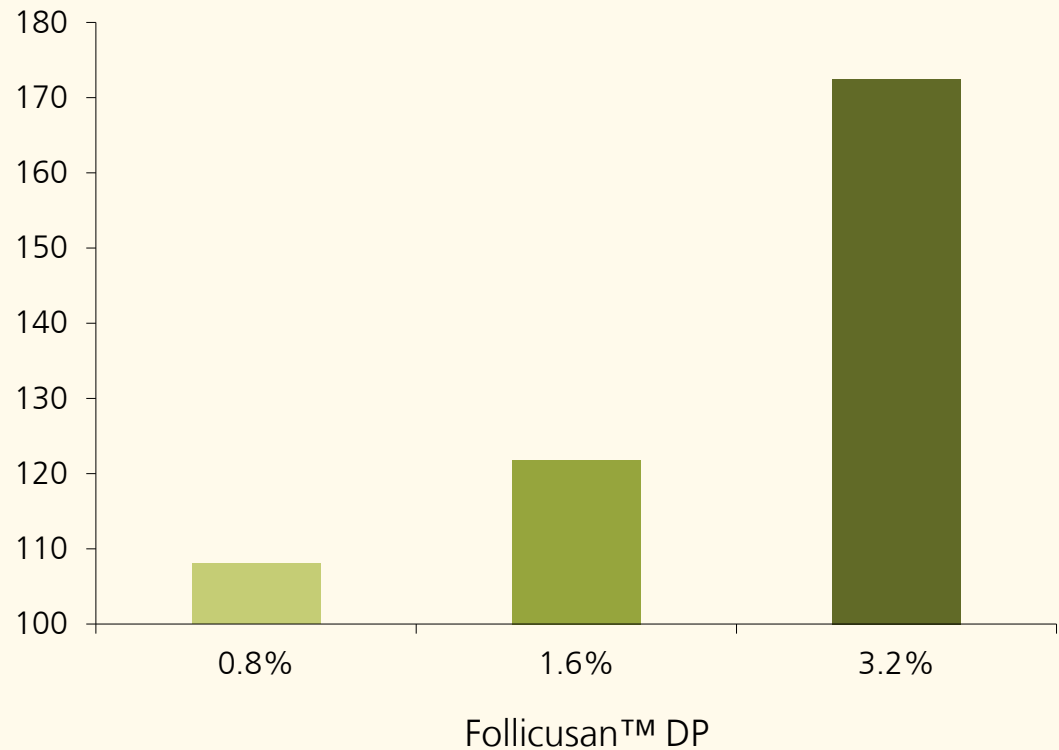
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Stimulation of Proliferation

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%).



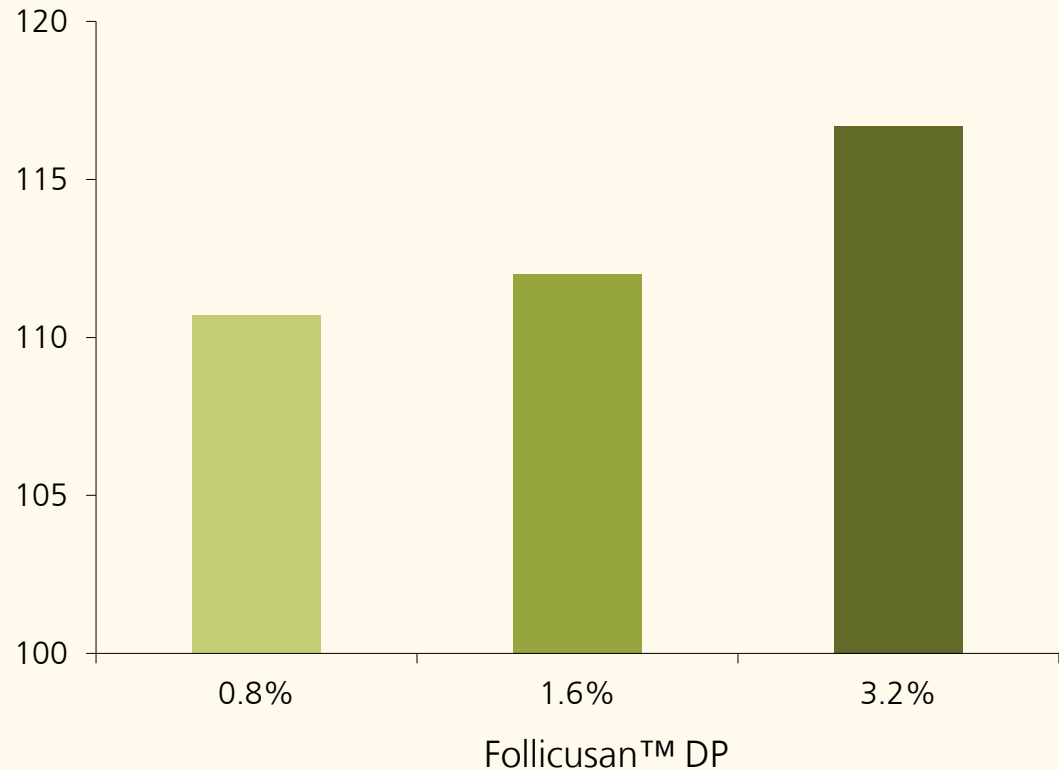
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Stimulation of Collagen Type IV Biosynthesis

Collagen type IV content (%)

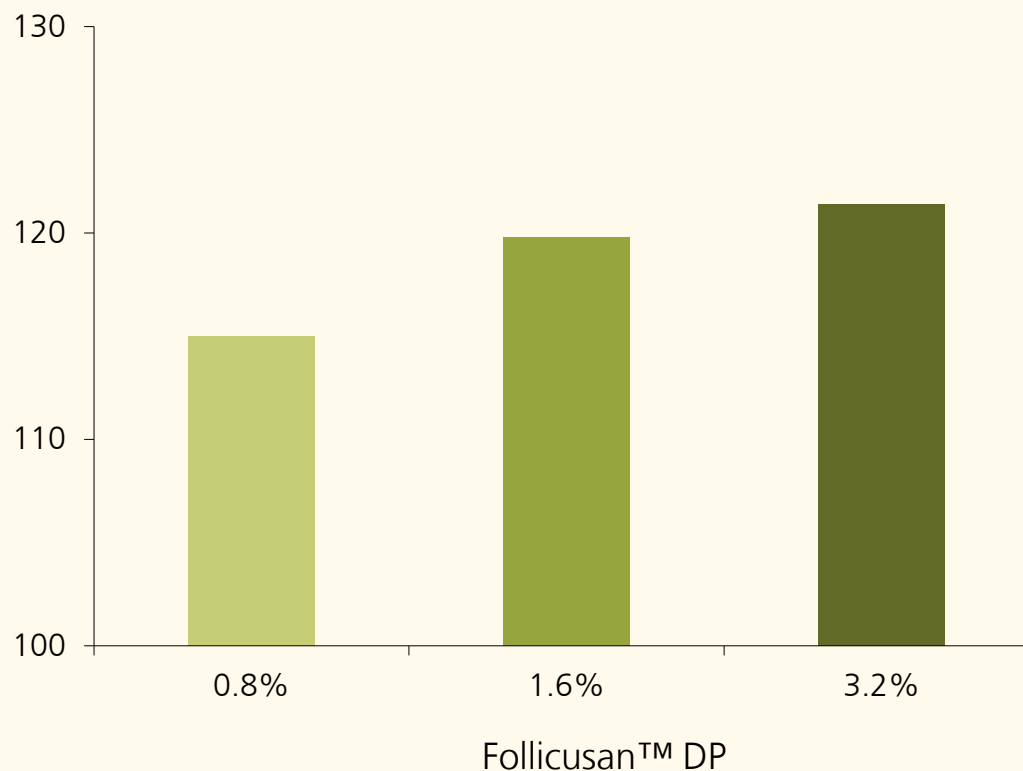
Human dermal papilla cells were grown under optimal conditions for 72 h. A Type IV Collagen ELISA was performed after another 216 h after application of different concentrations of Follicusan™ DP. Results are related to the Collagen content in untreated cells (100%).



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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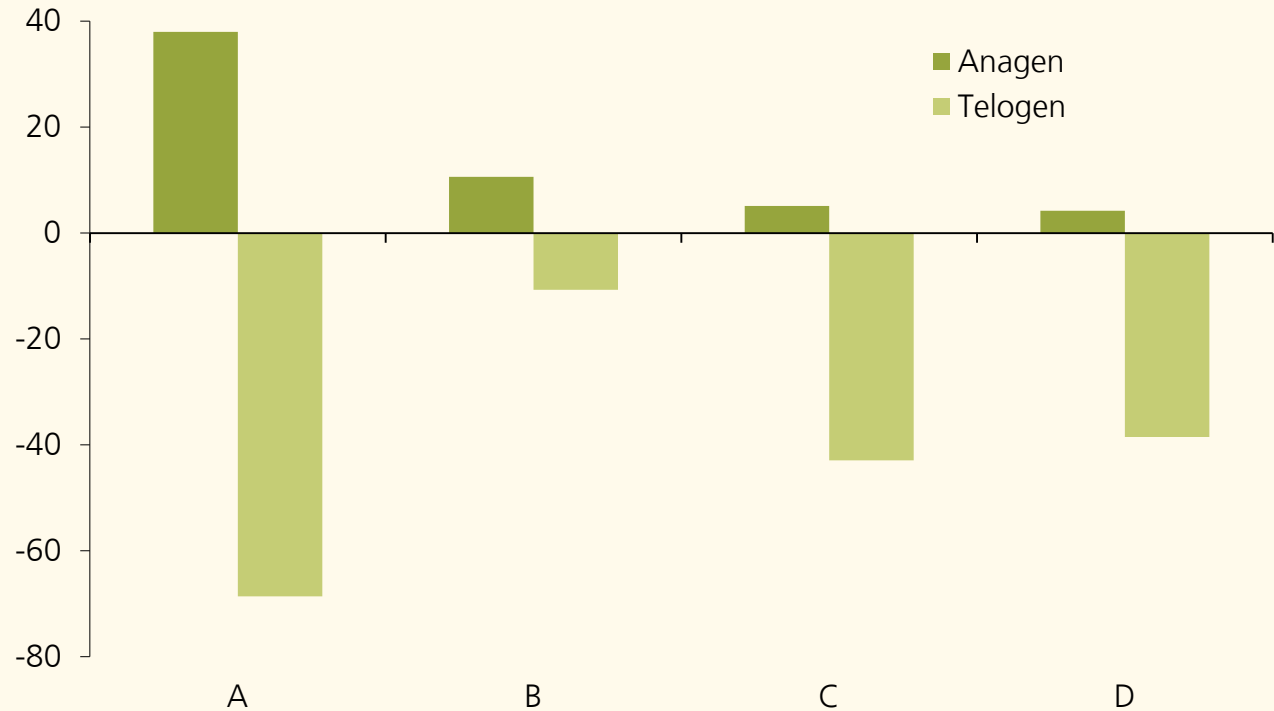
In vivo Test Results
Trichogram Technique



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.



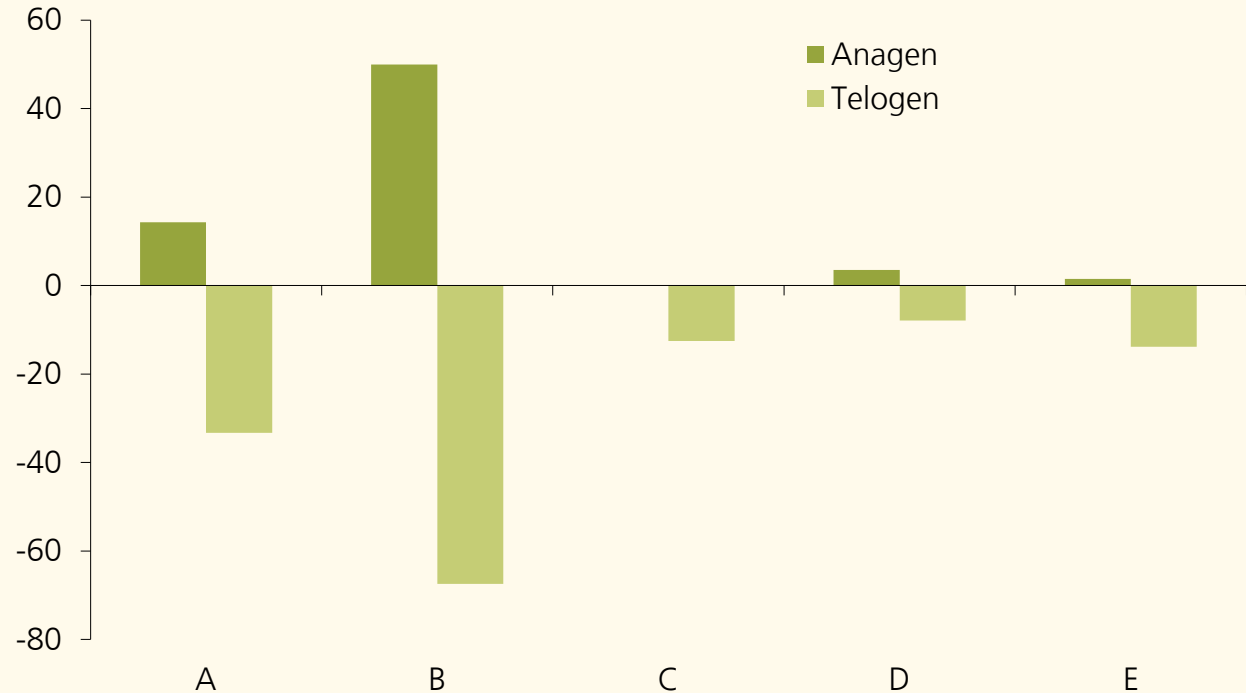
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Influence on *Alopecia androgenetica*

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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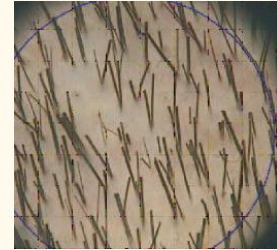
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In vivo Test Results
TrichoScan



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

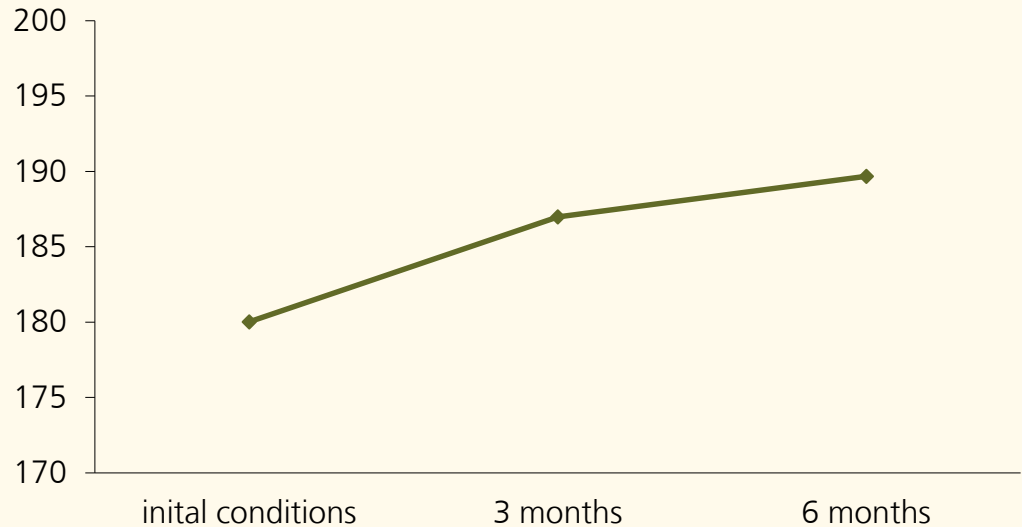


Influence on Hair Density

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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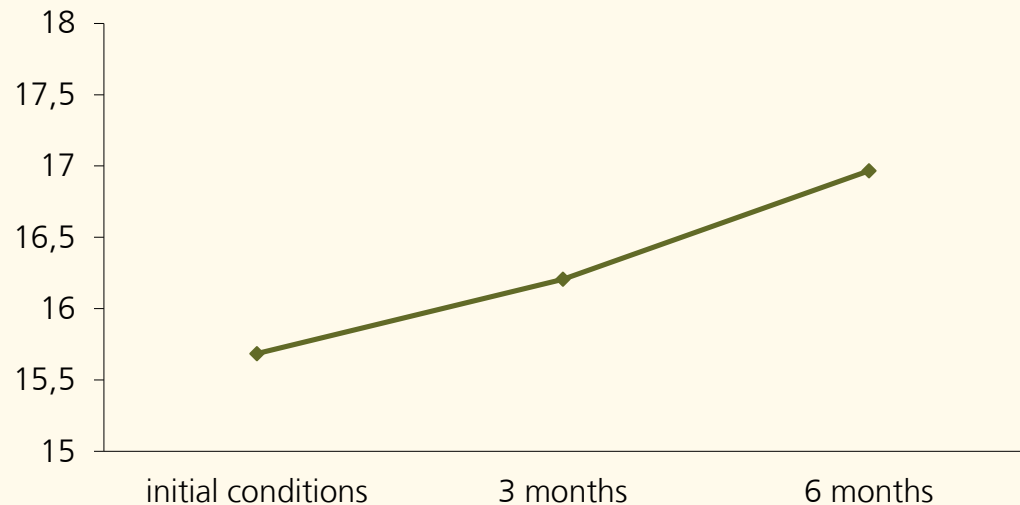


Influence on Cumulative Hair Thickness

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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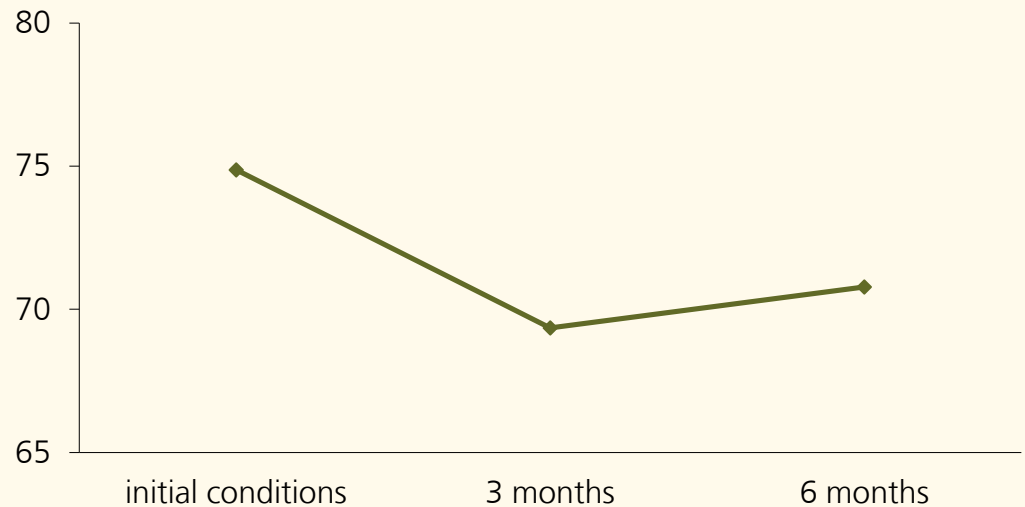


Influence on Anagen Hair Rate

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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