

HyRetin

Ester of hyaluronic and retinoic acid

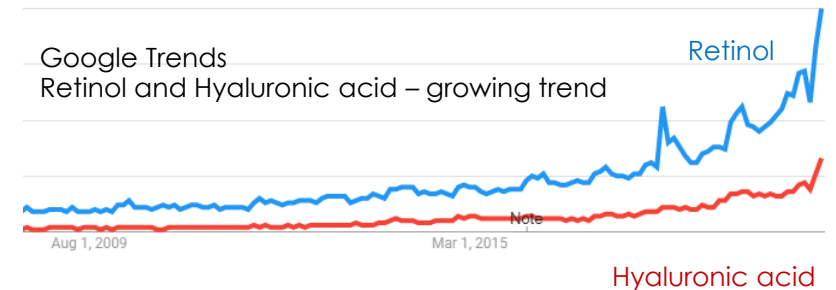
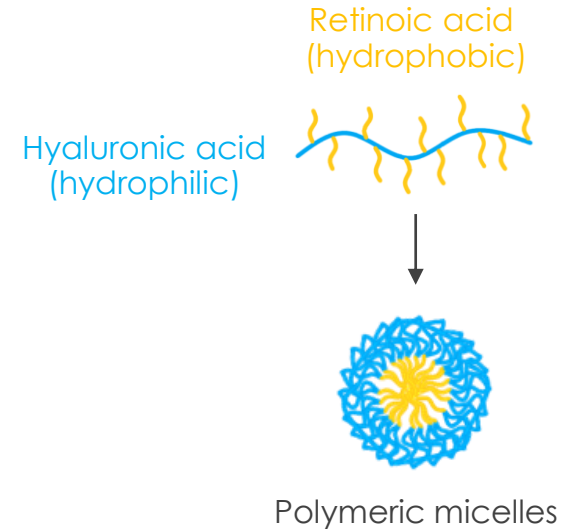
HyRetin



- Derivative of hyaluronic acid (10-20 kDa) and retinoic acid
- Combination of two very popular active ingredients
- **INCI:** Sodium Retinoyl Hyaluronate
- **Form:** water-soluble powder

Key properties:

- Create micelle-like structures
- Enhanced skin penetration => higher activity, lower risk of irritation
- Anti-acne activity
- Anti-ageing activity
- Better effect than retinoids
- Safer

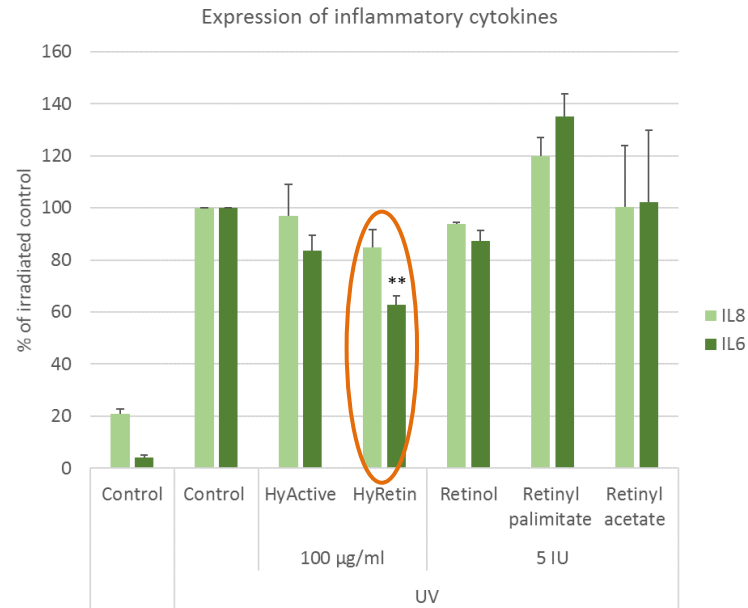


Results

Anti-inflammatory activity *in vitro*



- HaCaT keratinocytes + UV , incubated with HyRetin for 24 h;
- RT qPCR– interleukin 6 (IL6) and interleukin 8 (IL8);



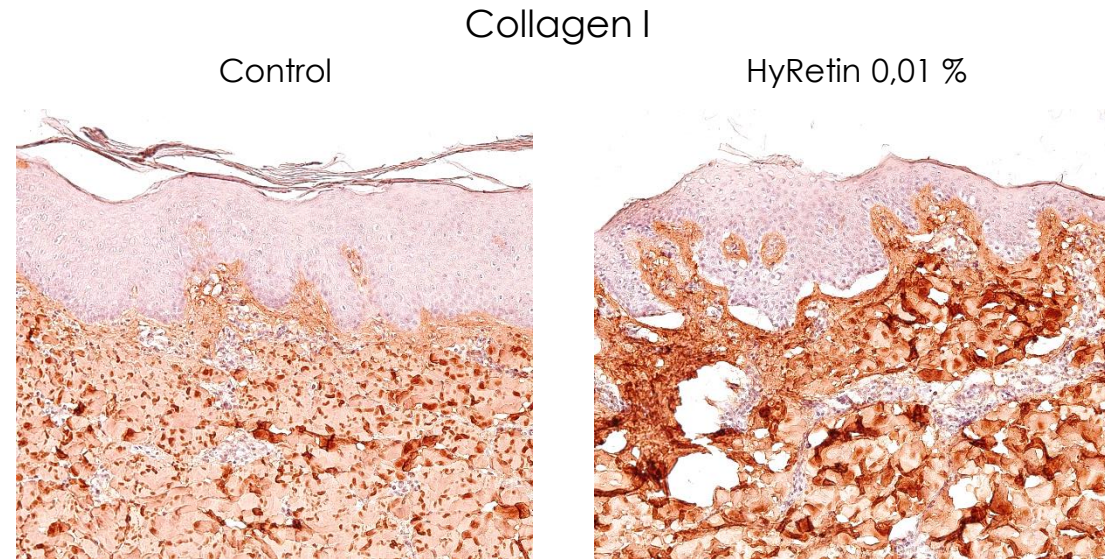
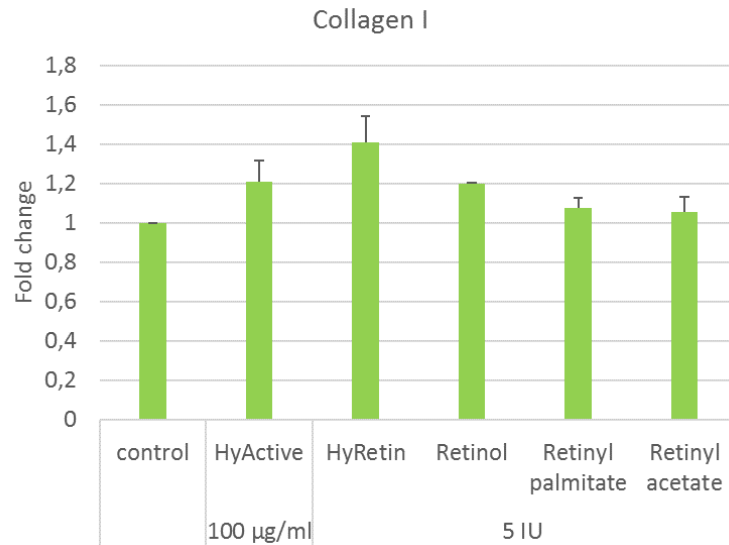
HyRetin strongly decreased expression of proinflammatory interleukins induced by UV radiation and is more efficient than other retinoids on the market.

Anti-ageing activity *in vitro*



Expression of dermal components

- 3T3 fibroblasts + 100 µg/ml HyRetin for 24 h; RT qPCR – collagen 1 (COL1)
- Immunohistochemistry staining; skin explants + 100 µg/ml HyRetin for 24 h



HyRetin enhanced expression of collagen 1 more effectively than other retinoids on the market.

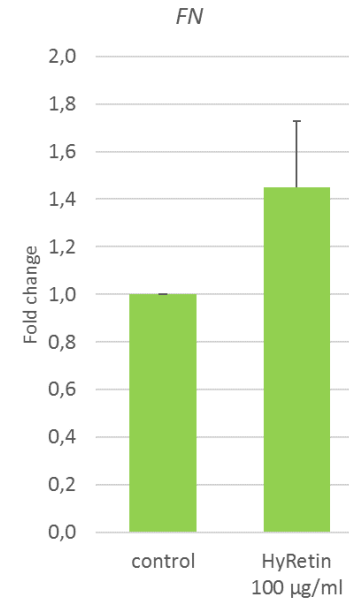
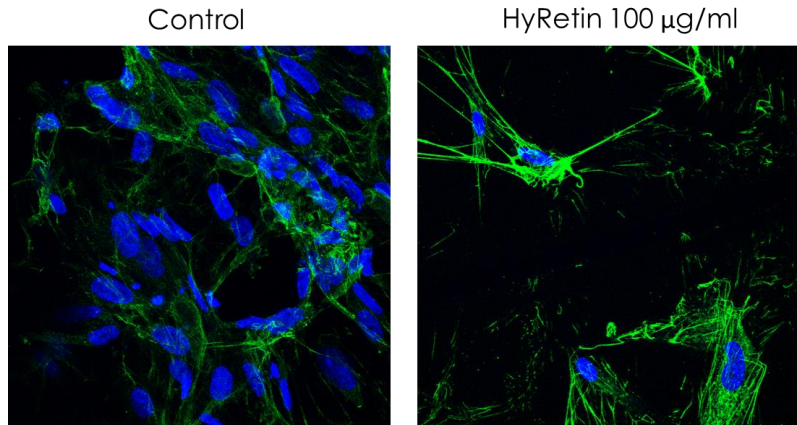
Anti-ageing activity *in vitro*



Expression of dermal components

- 3T3 fibroblasts + 100 µg/ml HyRetin for 24 h;
- RT qPCR – fibronectin (*FN*)
- Immunofluorescence staining

Fibronectin

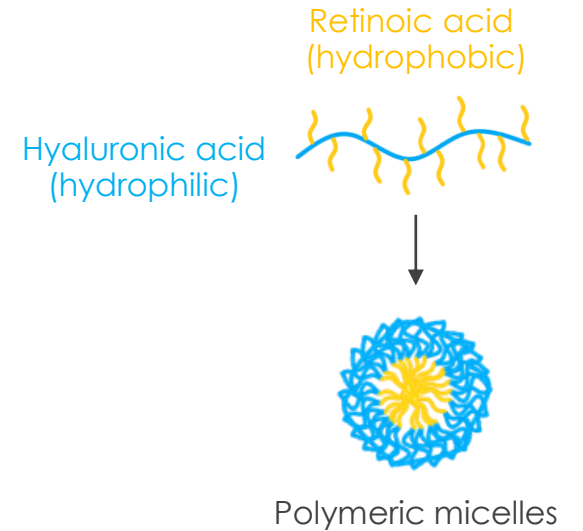
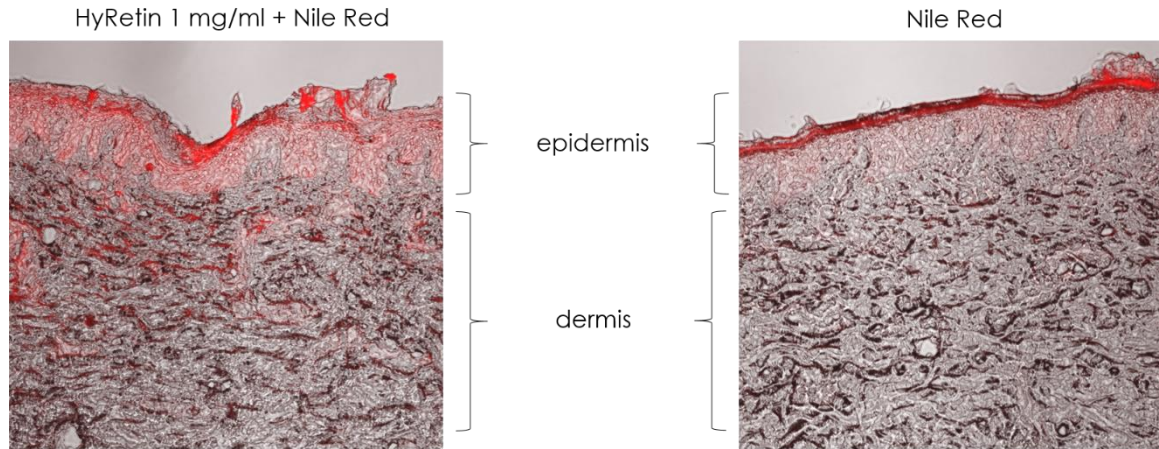


HyRetin enhanced expression of fibronectin.

Penetration into the skin



- HyRetin 1 mg/mL mixed with hydrophobic Nile red 1 $\mu\text{g}/\text{mL}$ in PBS
- Skin explants
- Franz diffusion cells, 24 h at 37 °C
- Confocal microscopy



HyRetin penetrates deep into the skin

1st *in vivo* study



Volunteers:

- 14 Caucasian women 37-58 years
- 6 weeks



Split-face:

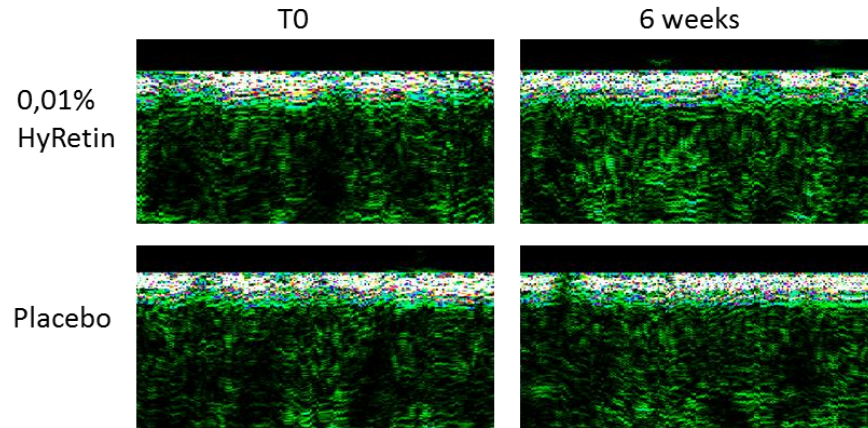
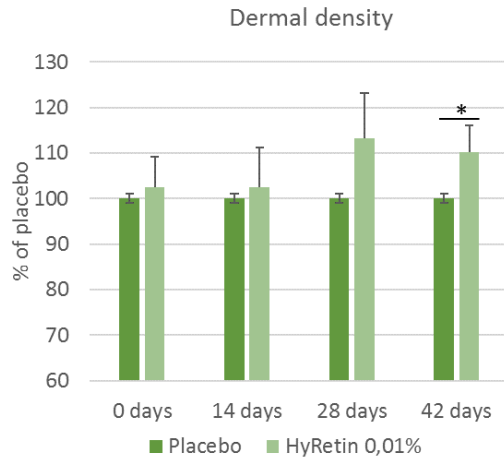
- 0,01 % HyRetin cream
- Placebo cream



Measurement devices:

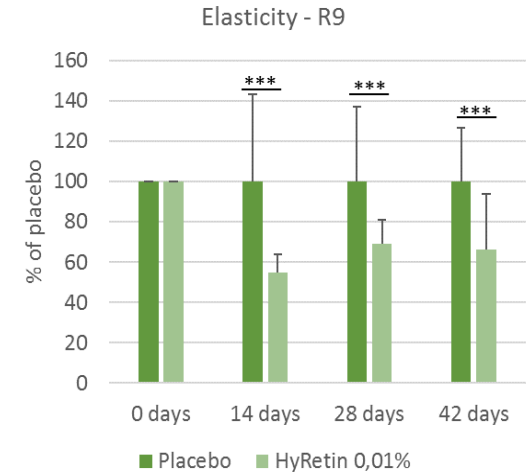
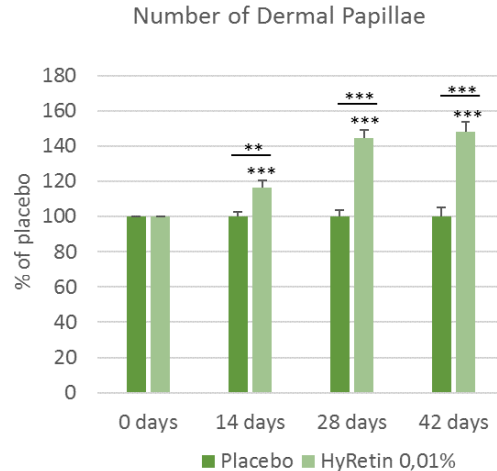
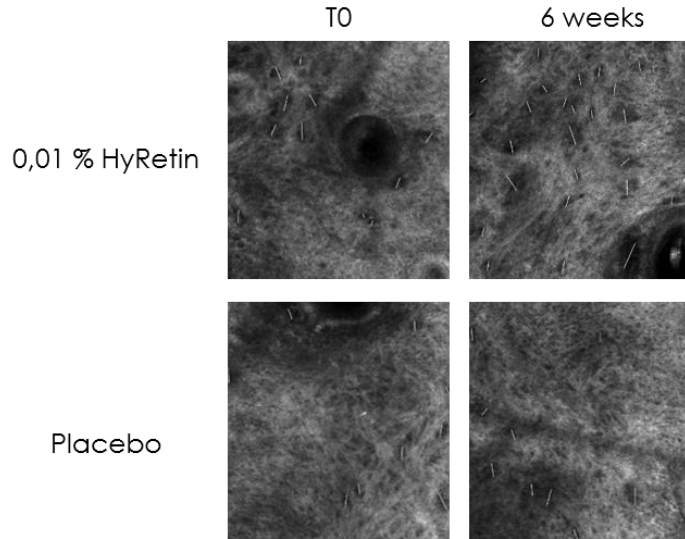
- Corneometer – skin hydration
- Sebumeter – sebum content
- Glossometer – skin texture
- Cutometer - elasticity
- Ultrascan UC 22 – dermal thickness and density
- Visioface (pigmented spots) – skin pores, wrinkles
- Vivascope (internal skin structure) – dermal papillae

Anti-ageing effect



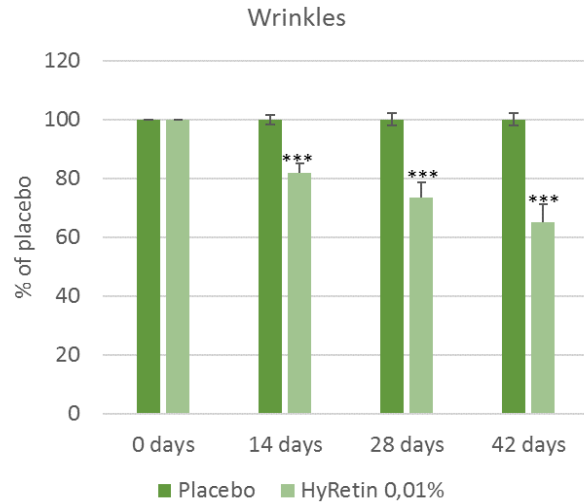
Dermal density was improved by 10%.

Anti-ageing effect



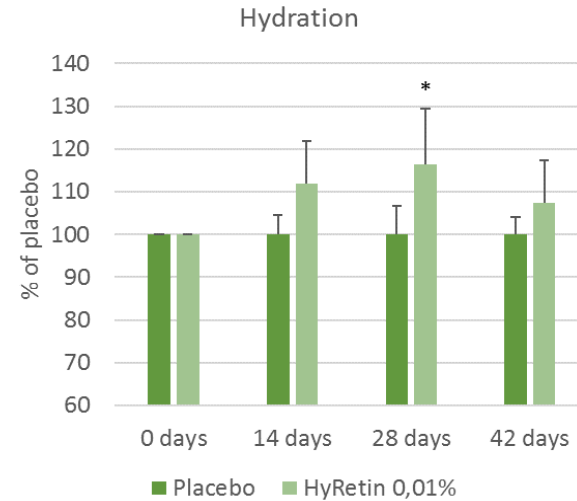
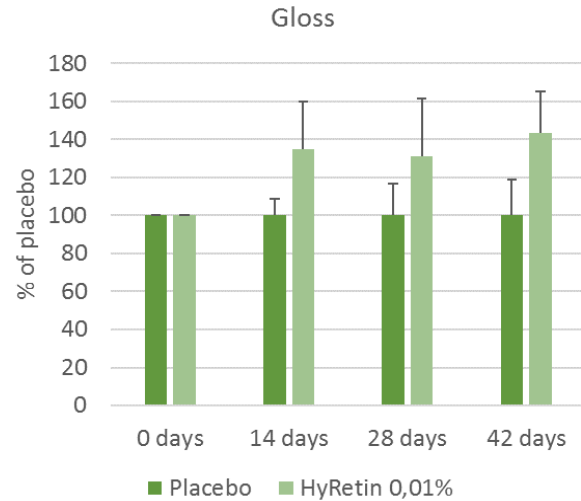
- Number of **dermal papillae** increased by 48 %.
- Elasticity was improved by 34%.
- (R9 – tiring effect, the speed of return of the skin to its original state after mechanical stress)

Anti-ageing effect



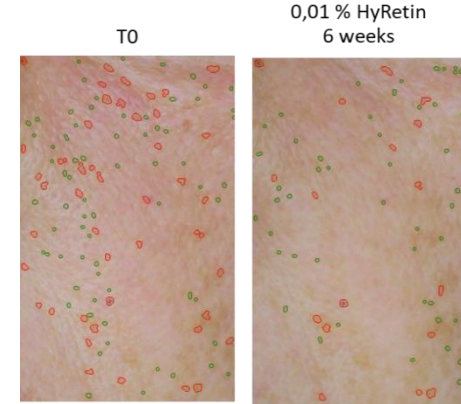
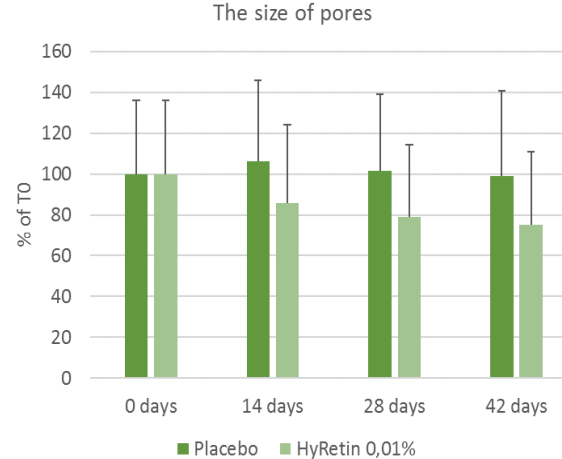
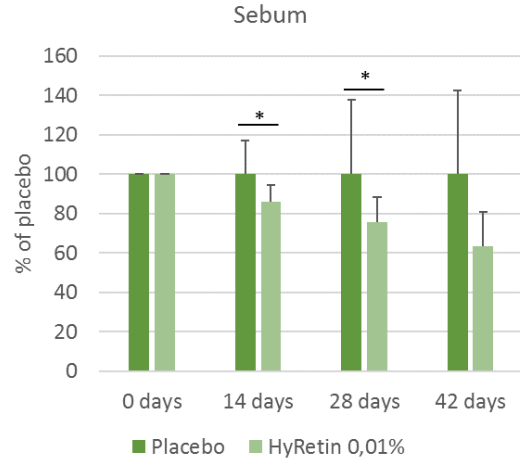
Observed **wrinkle reduction** by 36 %.

Anti-ageing effect – additional data

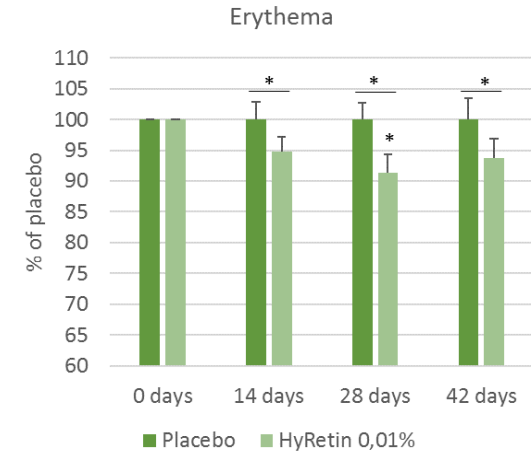


- **Skin texture** (gloss/roughness) was improved by 43%.
- **Hydration** was increased by 7%.

Anti-acne effect



- 36% reduction of **sebum content** after 6 weeks
- **Pores size** was reduced by 25%
- Skin **erythema** was decreased by 6%



2nd *in vivo* study



Volunteers:

- 16 Caucasian volunteers (15 women, 1 men; 15-33 years) with problematic skin
- 4 weeks



Split-face:

- 0,01 % HyRetin cream
- Placebo cream



- Whole face pictures – visual evaluation of skin condition
- Questionnaire: subjective evaluation

Anti-acne effect



T0



HyRetin 0,01%, 4 weeks



HyRetin effects:

After 4 weeks of 0,01 % HyRetin application there was a visible improvement of problematic skin condition.

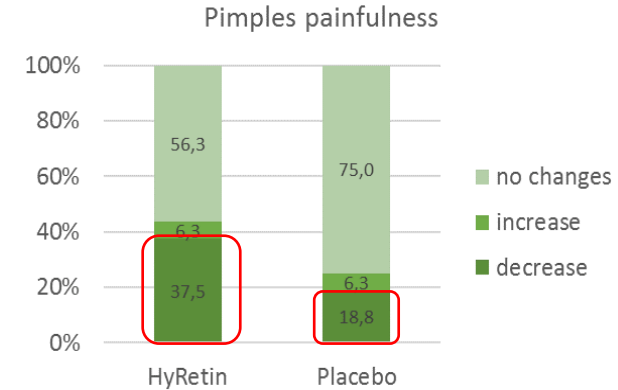
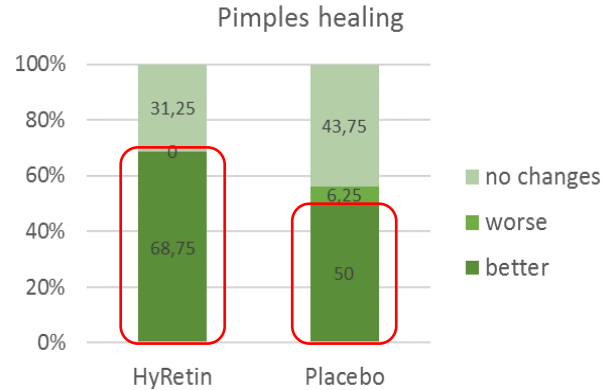
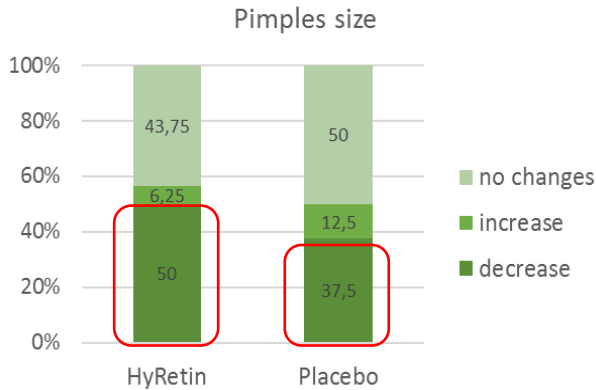
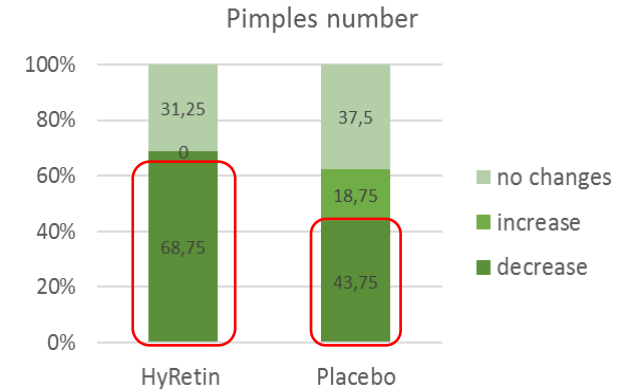
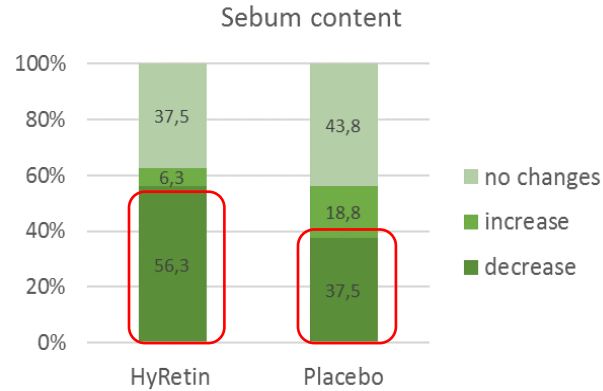
- Reduction of acne lesions
- Reduction of skin redness

Anti-acne effect



Subjective evaluation from questionnaires

All parameters from the subjective evaluation were rated better for the cream with 0,01 % HyRetin in comparison with placebo.



HyRetin – conclusion



- Derivative of hyaluronic acid (10-20 kDa) and retinoic acid
- Enhanced skin penetration => higher activity, lower risk of irritation

Anti-acne activity:

- Visual improvement of acne (*in vivo*)
- Downregulation of sebum production (*in vivo*)
- Reduction of pore size (*in vivo*)
- Reduction of erythema (*in vivo*)
- Downregulation of proinflammatory interleukins 6 and 8 (*in vitro*)

Anti-ageing activity:

- Improved skin elasticity, hydration and texture (*in vivo*)
- Increased dermal density (*in vivo*)
- Increased number of dermal papillae
- Upregulation of collagen and fibronectin expression (*in vitro*)

HyRetin – technical sheet



INCI: Sodium Retinoyl Hyaluronate

Samples: 1 g

Minimal ordering quantity: 1 kg

(If ordering smaller quantities, the price may increase due to handling fees)

Recommended concentration: 0,01 %

Appearance: fine yellow powder or granules

Supplied form: powder

Shelf-life: 6 months

Source: HyRetin is produced by chemical modification of low molecular weight hyaluronic acid with retinoic acid. Hyaluronic acid is obtained by fermentation, retinoic acid is of synthetic origin.

Compatibility and processing: Sensitive to light. Sensitive to heat and high humidity; avoid prolonged heating. Extreme pH (less than 4 or more than 9) leads to further decomposition. Incompatible with cationic substances, e.g. surfactants or polymers (polyquarternium-4, polyquarternium-10, etc.)

Solubility: Fully soluble in water; soluble in aqueous mixture of ethyl alcohol and isopropyl alcohol

Contipro

- World leader in research and manufacturing of hyaluronic acid.
- Innovations in biotechnologies since 1990.
- Reliable partner of successful brands.