

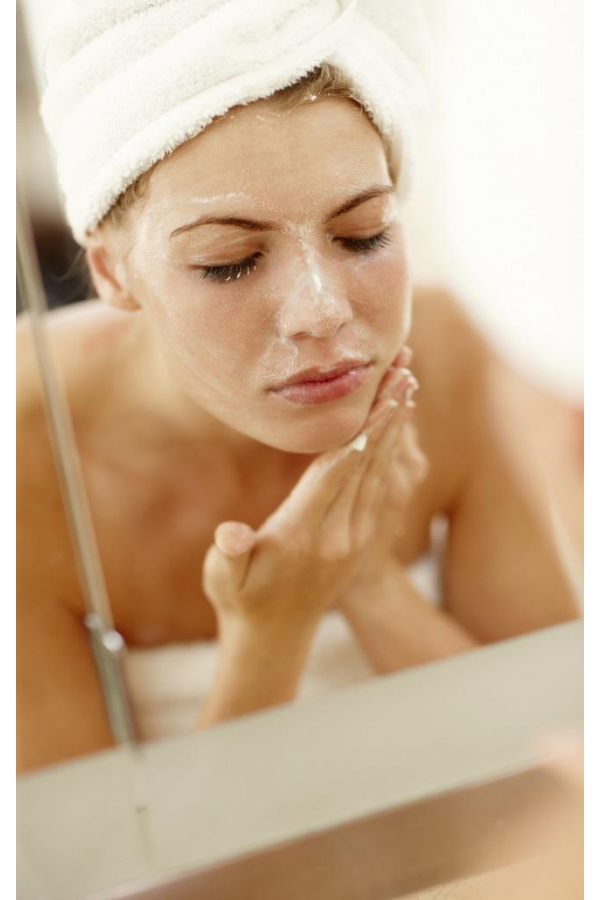
Herbapurifine®

Pure skin with the power of nature



What are skin impurities?

- skin impurities appear in many different ways:
 - from dull skin to pores
 - from black heads and white heads to acnes
 - from teens to adults
 - independent of gender
- all the skin impairments are the result or effect of skin impurities
- due to these discomforting elements, the skin looks untidy and undesirable
- various factors contribute in making the skin dry, patchy and ugly



Source: Mintel, „Managing skin conditions, July 2017; <http://www.womensok.com/7-home-remedies-to-remove-skin-impurities/>; <https://www.alcina.com/en/skin-care/spots-and-impurities.html>

Numerous factors leading to skin impurities

Causes and contributing factors



Genetic predisposition

Sun exposure

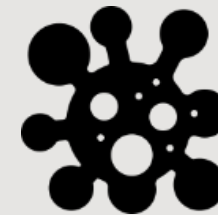


**harsh cleansing and
improper skin care routines**

**Diet &
lifestyle**



Stress level



**Appropriate skin
care reduces appearance
of impurities, prevents
occurrence of spots
and leaves the skin
bright looking**

**Hormonal
changes**



Sources: Adam et al. „Die Infektiologie“, („The Infectiology“), 2004, Springer Publishing; Ottaviani et al., „Lipid Mediators in Acne“, 2010, Hindawi Publishin Corporation
Kurokawa et al., „New developments in our unerstanding of acne pathogenesis and treatment“, 2009, Blackwell Publishing

Herbapurifine®

Encapsulated natural plant extracts supporting the skin's natural regulation of sebum production.

Reduces comedones, papules and pustules

Provides skin anti-inflammatory benefits

Reduces sebum content of impure skin

Provides positive skin sensory

Herbapurifine®

Composition and properties



**A cosmetic delivery system to treat impure skin
based on ROVISOME® technology**

INCI Aqua / Water; Butylene Glycol;
Lecithin; Salix Alba Bark Extract;
Bakuchiol; Magnolia Grandiflora
Leaf Extract

**Recommended
usage level** 2.0 – 6.0%

Appearance Pale beige, fluid

Odor Lecithin typical

Herbapurifine® is an encapsulated blend of highly effective plant extracts

Salix Alba Bark Extract



- White Willow (Salix Alba) belongs to the Salicaceae plant family
- known to provide astringent and antiseptic properties
- due to its anti-inflammatory capabilities it soothes skin redness and itch

Bu Gu Zhi



- common plant in China mainly used for medical treatments
- known for anti-bacterial and anti-inflammatory properties
- helps to combat excessive sebum production
- the active compound Bakuchiol is one component of Herbapurifine®

Magnolia Grandiflora Leaf Extract



- contains phenolic constituents shown to possess significant antimicrobial activity
- Magnolia Grandiflora Leaf Extract is said to neutralize internal skin factors and reduce redness

Source: <https://www.skinstore.com/beauty-center/ingredients/salix-alba.list>

Proposed mode of action of Herbapurifine®

Skin impurities

- formation of comedones, papules or pustules
- appearance of black heads
- increased skin itchiness and redness

Herbapurifine® intervenes on different levels to effectively combat skin impurities

Herbapurifine® regulates skin keratinization.

Herbapurifine® helps combat excessive sebum production.

Herbapurifine® inhibits pro-inflammatory mediators.



Cosmetic benefits

- reduced skin impurities
- prevention of spot formation
- leaves the skin looking clear and even
- reduced skin redness and soothes skin



How do we know?

Our *in vitro* studies based on Herbapurifine®

Anti-inflammatory benefits

Minimum inhibitory concentration (MIC)

In vitro studies based on Herbapurifine®

Summary

Anti-inflammatory benefits

Cell type	Primary human keratinocytes
Test concentration	<ul style="list-style-type: none">▪ Medium control▪ 1 ppm Acetylsalicylic Acid (Positive control)▪ 2.5 ppm Herbapurifine®
Time of measurement	48 hours after UVB (30 mJ/cm ²) exposure
Test design	Prostaglandin E2 (PGE2) and Interleukin-8 (IL-8) ELISA
Results	Herbapurifine® can provide skin soothing benefits.

MIC (Minimal Inhibitory Concentration)

Bacteria type	Propionibacterium acnes (ATCC 11828)
Test design	Acc. to DIN 58940 The MIC is the lowest concentration of a chemical preventing visible growth of a bacterium
Results	The MIC of Herbapurifine® is 400 ppm.

Anti-inflammatory benefits

Test design

Cell type	Primary human keratinocytes
Test concentration	<ul style="list-style-type: none">▪ Untreated (medium control)▪ 1 ppm acetylsalicylic acid (positive control)▪ 2.5 ppm Herbapurifine®
Application	2 hours before UVB exposure (30 mJ/cm ²); repeated 24 hours after UVB exposure
Time of measurement	48 hours after UVB exposure
Measurement	Prostaglandin E2 (PGE2) and Interleukin-8 (IL-8) ELISA
Observed activity	Release of pro-inflammatory proteins PGE2 and IL-8 – Anti-inflammatory activity

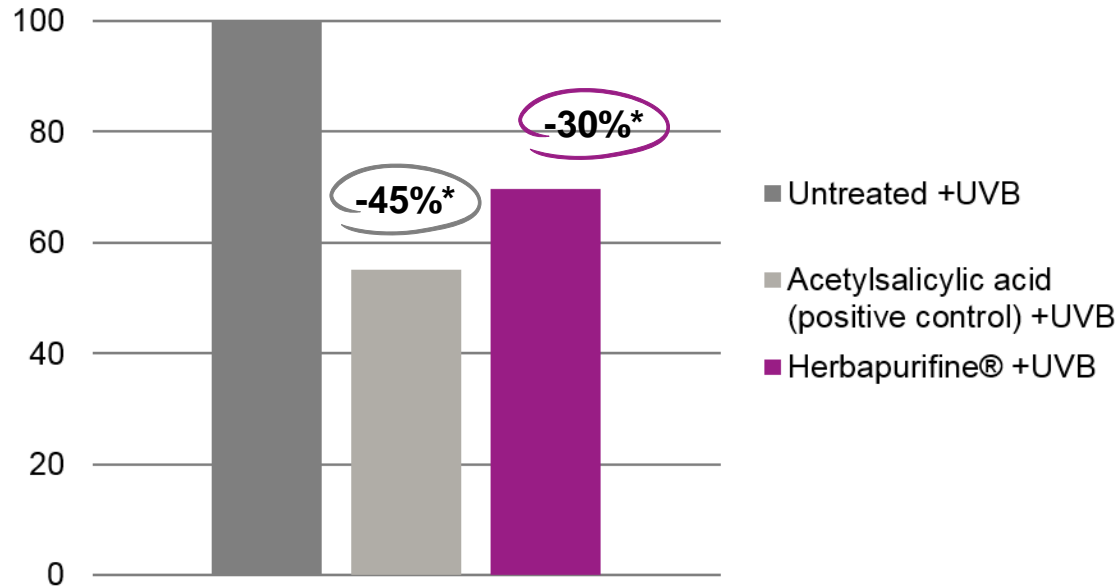


Anti-inflammatory benefits

Test results

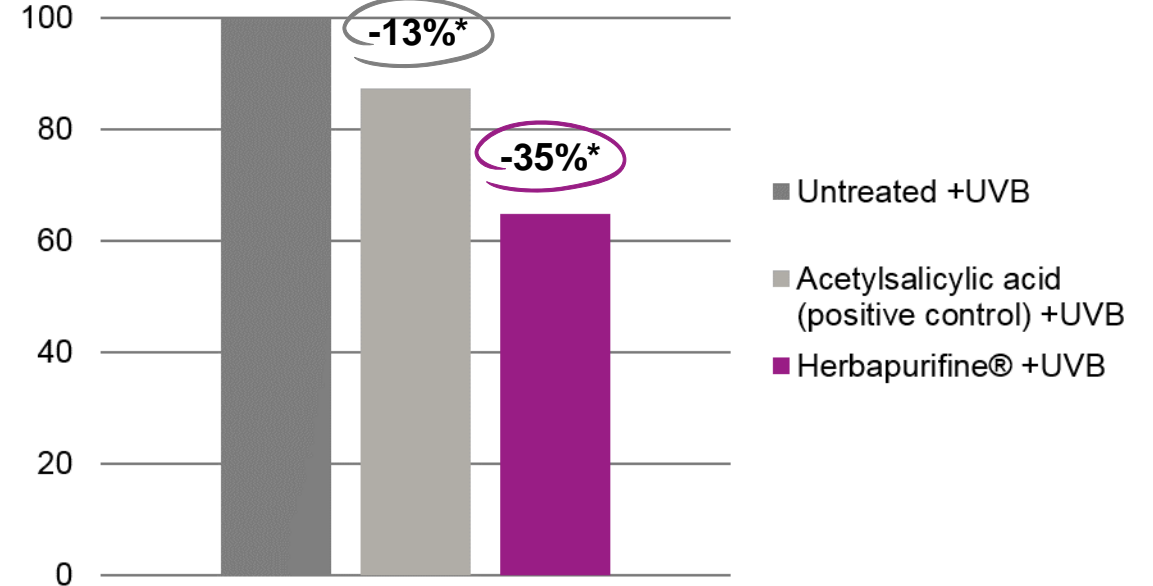
PGE2 release 48 hours after UVB exposure

PGE2 release relative to untreated [%]



IL-8 release 48 hours after UVB exposure

IL-8 release relative to untreated [%]



Herbapurifine® can promote soothing benefits.

* Compared to untreated (medium control)

Minimum inhibitory concentration (MIC)

Test design and results

Bacteria type	Propionibacterium acnes (ATCC 11828)
Measurement	Minimum inhibitory concentration (MIC) acc. to DIN 58940 The MIC is the lowest concentration of a chemical preventing visible growth of a bacterium
Observed activity	Anti-microbial activity

The MIC of **Herbapurifine®** is 400 ppm.





How do we know?

Our *in vivo* studies based on Herbapurifine®

Sebum study

Skin impurity study

Self-assessment

In vivo studies based on Herbapurifine®

Summary

	Skin appearance - short-term Sebum	Skin appearance - long term Sebum, efflorescence & self-assessment
Application area	Face (forehead)	Face
Test formulations	<ul style="list-style-type: none"> ▪ Vehicle (gel) ▪ 5% Herbapurifine® (gel formulation) 	<ul style="list-style-type: none"> ▪ 3% Herbapurifine® (gel formulation)
Time of measurement	Before application and 1, 2, 3, 4 and 6 hours after application	<div style="text-align: center;"> <p>Start — 14 days —> 28 days</p> </div>
Test design	Single application of test formulation	Twice daily application of test formulation. Panelist self-assessment after 28 days.
Results	Lowers sebum levels by 30% compared to the vehicle formulation 6 hours after application	<p>Nearly 17% lower sebum levels relative to initial conditions.</p> <p>Decreased skin efflorescence by one third after 28 days which was also noticeable by the panelists based on their subjective scoring after 4 weeks of application.</p>

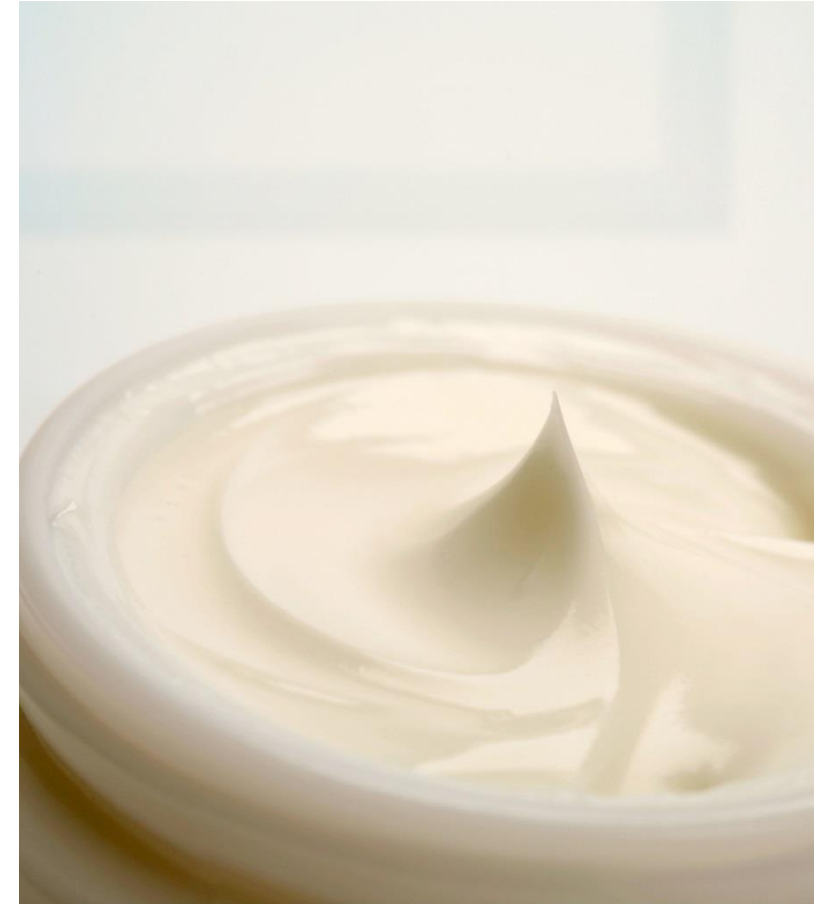
Improvement of skin appearance (sebum) – short-term Test design

- Number of panelists** 5 (female and male with impure skin, aged 24 - 51)
- Test formulations** Gel formulation with 5% Herbapurifine® compared to vehicle formulation and initial conditions
- Test design** Panelists carried out their daily cleansing routine in the morning without applying any care products.
Panelists applied the test formulations once. Measurement before application (initial condition) and after 1, 2, 3, 4 and 6 hours.
- Application area** Face (forehead), half-side test
- Measurement** Sebum level by means of Sebumeter SM815 (Fa. Courage+Khazaka)



Improvement of skin appearance (sebum) – short-term Test formulation

	ER-425	A w/w %	B w/w %
A	Aqua / Water	89.6	84.6
	Carbomer	1.3	1.3
	Sodium Hydroxide 10%	3.6	3.6
B	Herbapurifine® (Water; Butylene Glycol; Lecithin; Salix Alba Bark Extract; Bakuchiol; Magnolia Grandiflora Leaf Extract)	-	5.0
	Polyoxyethylene Sorbitol	5.0	5.0
	Preservative	0.5	0.5

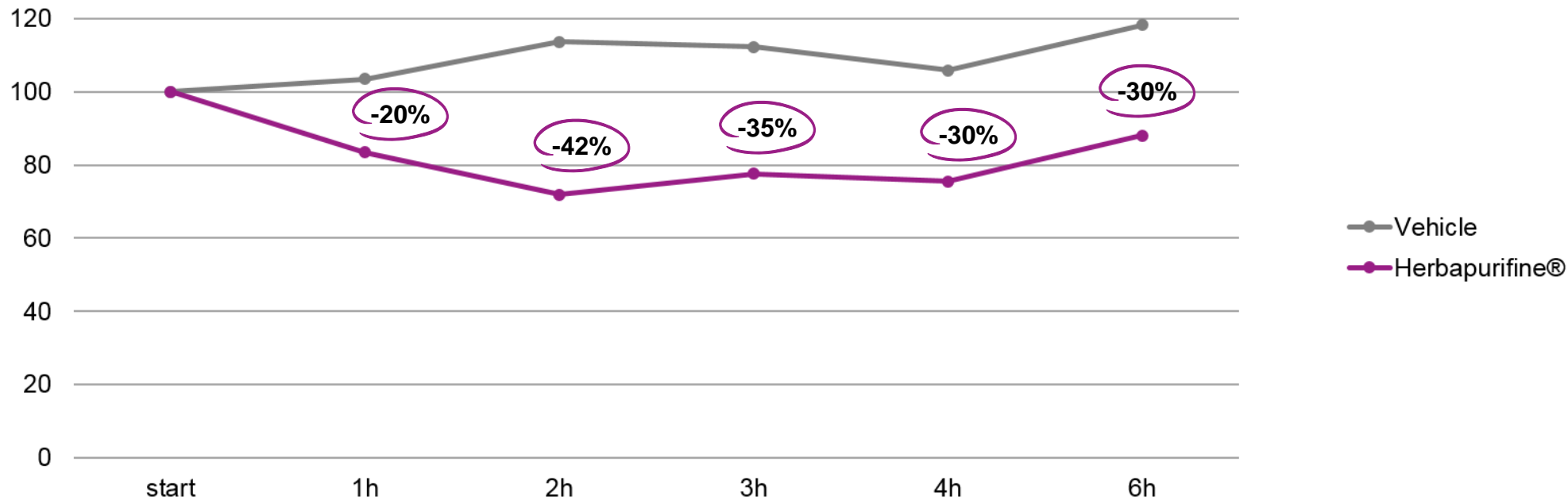


Improvement of skin appearance (sebum) – short-term

Test results

Development of sebum levels compared to initial conditions, short-term

Sebum content standardised on initial conditions [%]



Herbapurifine® reduces sebum levels by 30% compared to the vehicle formulation 6 hours after application.

Skin appearance study (sebum, efflorescence, self-assessment) – long-term Test design

Number of panelists 20 (female with impure skin, aged 16 - 36)

Test formulations Gel formulation with 3% Herbapurifine®

Test design Panelists apply the test formulations twice daily over a period of 4 weeks.

Application area Face (forehead), half-side test

Measurement Sebum level by means of Sebumeter SM815 (Fa. Courage+Khazaka)

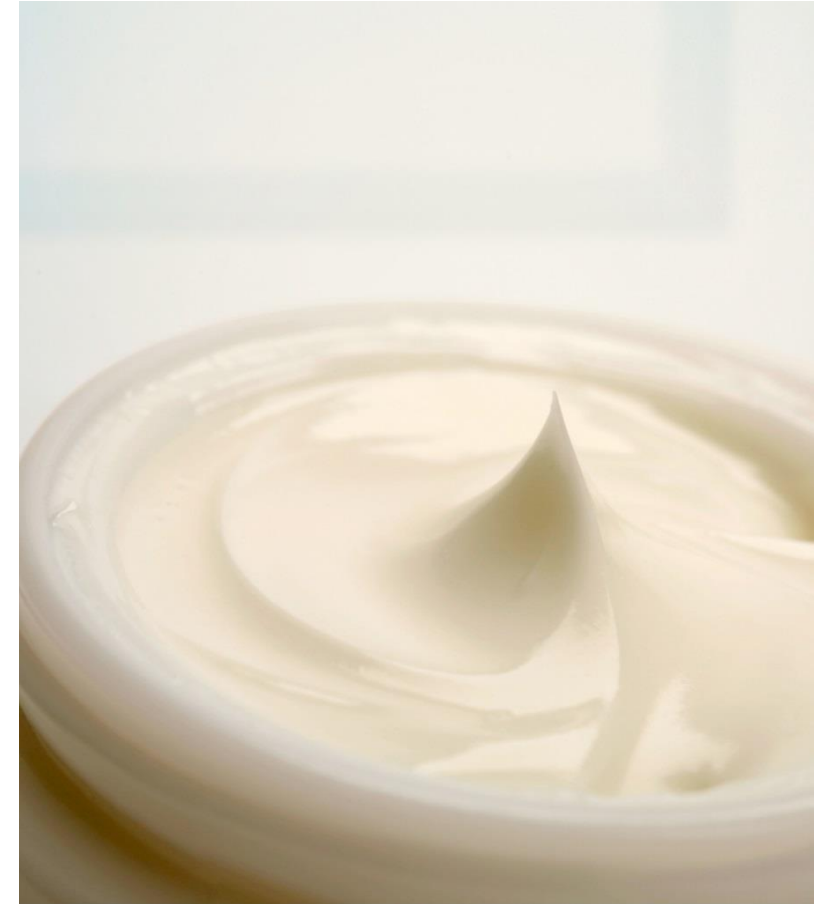
Counting of comedones, papules and pustules.

Self-assessment by the panelists.



Improvement of skin appearance (sebum) – long-term Test formulation

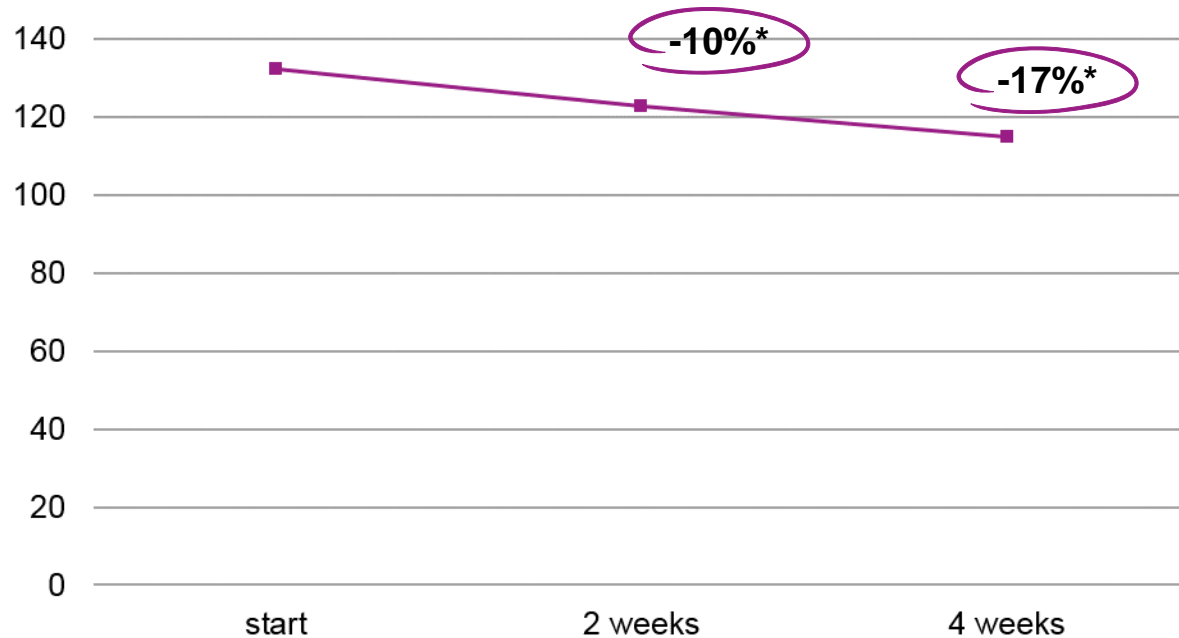
	ER-453	A w/w %
A	Aqua / Water	86.4
	Glycerin	4.0
	Xanthan Gum	3.1
	Microcrystalline Cellulose; Algin	2.5
B	Herbapurifine® (Aqua / Water; Butylene Glycol; Lecithin; Salix Alba Bark Extract; Bakuchiol; Magnolia Grandiflora Leaf Extract)	3.0
	Preservative	1.0



Improvement of skin appearance (sebum) – long-term Test results

Long-term improvement of sebum levels

Sebum [$\mu\text{g}/\text{cm}^2$] during application of Herbapurifine[®] over 4 weeks



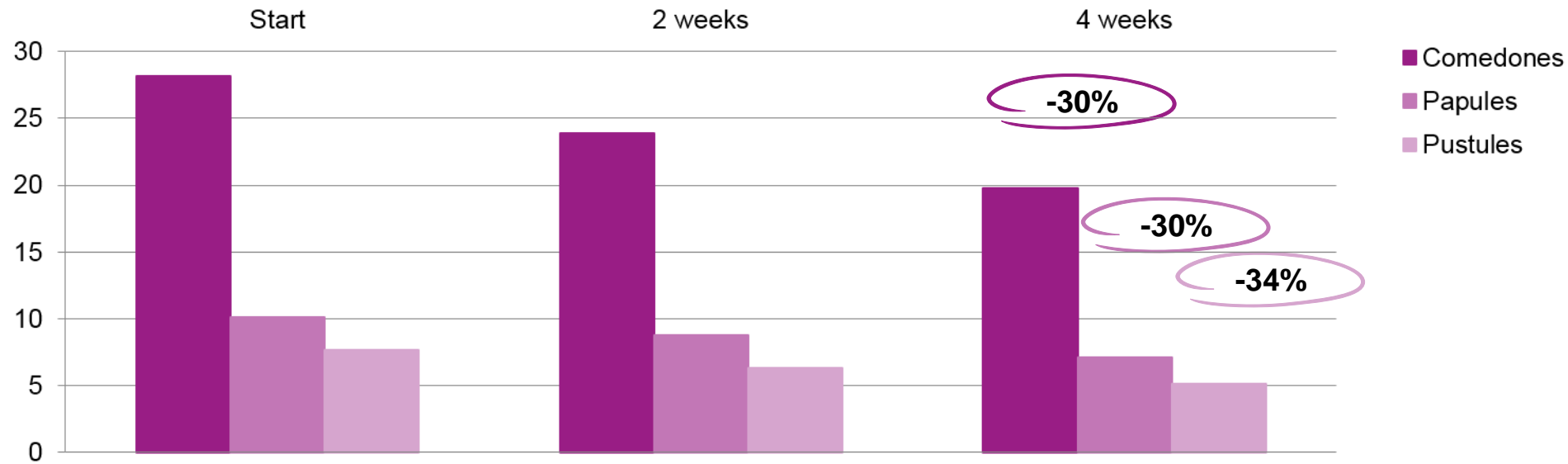
A gel containing 3% Herbapurifine[®] reduces sebum levels by 17% compared to untreated after 4 weeks of application.

* Compared to untreated

Improvement of skin appearance (efflorescence) – long-term Test results

Reduction of comedones, papules and pustules

Counts



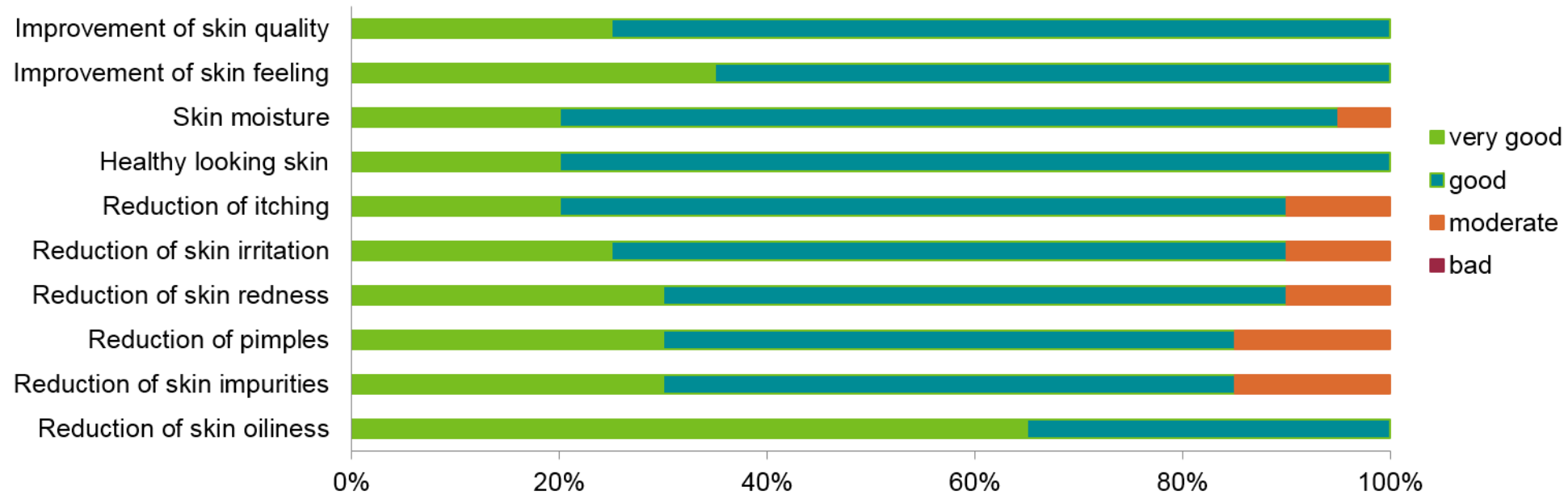
Herbapurifine® (3% in test formulation) decreases skin efflorescence about one third after 4 weeks of application.

Self-assessment of skin appearance – long-term

Test results

Improvement of skin feel

Criteria [counts]



Herbapurifine® (3% in test formulation) provides positive skin conditions for consumers.

Sebum Control Fluid (L098-21.2-0818)

Non soaping, ultra light soft gel texture serum with 3% Herbapurifine®

Phase	Ingredients	w/w%
A	Glycerin	2.00
	Aqua	70.45
	dermofeel® PA-12 (Sodium Phytate)	0.10
	symbio® prot V (Hydrolyzed Vegetable Protein; Sodium Citrate; Magnesium Stearate; Xanthan Gum)	2.00
B	TEGIN® M Pellets (Glyceryl Stearate)	0.50
	dermofeel® sensolv (Isoamyl Laurate)	2.00
	TEGOSOFT® DC (Decyl Cocoate)	3.00
	Carthamus Tinctorius Seed Oil	3.00
	TEGO® Feel C 10 (Cellulose)	1.00
	dermofeel® Toco 70 non GMO (Tocopherol; Helianthus Annuus Seed Oil)	0.15
	dermosoft® GMCY (Glyceryl Caprylate)	0.30
C	dermosoft® 1388 eco (Glycerin; Aqua; Sodium Levulinate; Sodium Anisate)	3.00
	Herbapurifine® (Aqua / Water; Butylene Glycol; Lecithin; Salix Alba Bark Extract; Bakuchiol; Magnolia Grandiflora Leaf Extract)	3.0
	Parfum	0.50

Preparation:

1. Mix the ingredients for phase A and heat to 78 °C while stirring.
2. Melt the ingredients for phase B at a temperature of 78 °C.
3. Once the phases have reached the prescribed temperature, slowly emulsify phase B into phase A while stirring and then homogenize for 1-2 min. using an Ultra-Turrax.
4. Cool down fast under medium stirring
5. Add phase C below 35°C in the given order while stirring and cool down to room temperature.
6. Adjust pH-value carefully with diluted citric acid to a pH of 5.0 - 5.5.

Formulation hints

Recommended usage concentration: 2.0 – 6.0%

Processability: Herbapurifine® can easily be processed into final formulations by stirring at 30-35°C.

Herbapurifine® ...

**Anti inflammatory
benefits**



...provides skin
soothing benefits.

**Improvement of skin
appearance**



... reduces sebum content
and efflorescence of
impure skin.

**Self assessment of skin
feel**



...provides positive skin
conditions for
consumers.

**Say yes to clean, pure skin
with the power of nature**



EVONIK

POWER TO CREATE

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In vitro studies based on Herbapurifine®

Summary of Methods

Test	Methods
Anti inflammatory benefits	<p>Enzyme-linked immunosorbent assay (ELISA), also known as an enzyme immunoassay (EIA), is a biochemical technique used mainly in immunology to detect the presence of an antibody or an antigen in a sample. In ELISA an unknown amount of antigen is affixed to a surface, and then a specific antibody is applied over the surface so that it can bind to the antigen. This antibody is linked to an enzyme, and in the final step a substance is added that the enzyme can convert to some detectable signal, in this case a color change in a chemical substrate.</p> <p>The anti-inflammatory effect was tested using the xCELLigence system for real-time cell analysis. This system measures impedance dependant signals for the use in marker free cell analysis as well as cell invasion- and cell migration-assays.</p> <p>Primary human keratinocytes of the first passage were seeded together with 200 µl culture medium into 96-well E-Plates and then monitored with a microelectronic sensor. The cellular impedance levels (CI=Cell Index) were measured during the entire 72 h test period. After 24 h of cultivation the culture medium was removed and different concentrations of Herbapurifine® were added. After 2 h the samples were irradiated with UVB (30mJ/cm²) to trigger a UV-induced inflammation. After a 24 h incubation the culture medium containing Herbapurifine® was removed and substituted by fresh culture medium containing Herbapurifine®. After an additional 24 h incubation time the culture medium containing the active is finally removed and both samples taken 24 h and 48 h after UVB exposure are used for the pro-inflammatory protein ELISAs (PGE2 and IL-8)</p>
Anti microbial activity (MIC)	<p>Material: Herbapurifine® and Propionibacterium Acnes (ATCC 11828)</p> <p>The MIC [%] for P. acnes was determined using the agar plate dilution method (DIN 58940)</p> <ul style="list-style-type: none">○ Agar medium (Mueller-Hinton Agar, pH 5,5) containing Herbapurifine® at different concentrations was prepared and dispensed on culture plates○ P. acnes suspended in culture medium was seeded on the agar plates (Propionibacterium acnes ATCC 11828, 1,9 x 10⁸ cfu/ml)○ Incubation of the plates for 72 h at 36 °C under anaerobic conditions○ The minimum inhibitory concentration (MIC) was determined (MIC is the lowest concentration of microorganisms for which there is not visible growth)

In vivo studies based on Herbapurifine®

Summary of Methods

Test	Methods
Improvement of skin appearance (sebum) - short-term	<ul style="list-style-type: none"> • 5 panelists (24-51 years) with comedones, papules and pustules • One application on one half of the face with gel containing 5% Herbapurifine® is compared to vehicle formulation. • Duration: 4 weeks • Evaluation of efflorescences: Counting of open and closed comedones, papules and pustules after 0/2/4 weeks • Sebumetric determination after 0/2/4 weeks • Subjective evaluation: completion of the questionnaire: e.g. reduction of itchiness and inflammations after 2/4 weeks • Questionnaire to be completed by the panelists
Improvement of skin appearance (sebum and efflorescence) Incl. panelis self-assessment - long-term	<ul style="list-style-type: none"> • 20 panelists (16-36 years) with comedones, papules and pustules • Application 2 x daily on the same half of the face with gel containing 3 % Herbapurifine® • Duration: 4 weeks • Evaluation of efflorescence: Counting of open and closed comedones, papules and pustules after 0/2/4 weeks • Sebumetric determination after 0/2/4 weeks • Panelist self- assessment: completion of the questionnaire: e.g. reduction of itchiness and inflammations after 2/4 weeks