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TECHNICAL DATA SHEET

GRÜNDELIN COMPLEX / A / HGLA / CA11 /



Trade Name: GRÜNDELIN COMPLEX / A / HGLA / CA11 /

Product Code: GLIAHGLAC11.

INCI Name: AQUA, GLYCERIN, ISOPROPYL ALCOHOL, GLYCINE SOJA GERM EXTRACT, PISUM SATIVUM EXTRACT, VICIA FABA SEED EXTRACT, PHASEOLUS VULGARIS EXTRACT, PEG-40 HYDROGENATED CASTOR OIL, AMINOBUTYRIC ACID, HYDROLYZED SERUM PROTEIN, TOCOPHERYL ACETATE, POTASSIUM SORBATE, ASCORBYL PALMITATE, RETINYL PALMITATE, NIACINAMIDE, PANTHENOL, RIBOFLAVIN, INOSITOL, BIOTIN, PYRIDOXINE HCL, THIAMINE HCL, CYANOCOBALAMIN.

INCI Status: Conforms.

REACH Status: Low Volume Exemption.

CAS Number: 7732-18-5; 56-81-5; 67-63-0; 84776-91-0; 90082-41-0; 89958-06-5; 85085-22-9; 61788-85-0, 56-12-2; 84082-72-4; 7695-91-2 / 58-95-7; 24634-61-5/ 590-00-1; 137-66-6; 79-81-2; 98-92-0; 81-13-0 / 16485-10-2; 83-88-5; 87-89-8; 58-85-5; 58-56-0 / 12001-77-3; 67-03-8; 68-19-9.

EC Number: 231-791-2; 200-289-5; 921-078-0; 290-130-6; 289-628-6; 285-354-6; Not available; 200-258-6; 282-018-0; 231-710-0 / 200-405-4; 246-376-1; 205-305-4; 201-228-5; 202-713-4; 201-327-3 / 240-540-6; 201-507-1; 201-781-2; 200-399-3; 200-386-2; 200-641-8; 200-680-0.

Origin: GLYCERIN: Vegetable origin.

ISOPROPYL ALCOHOL: Synthetic origin.

GLYCINE SOJA GERM EXTRACT, PISUM SATIVUM EXTRACT, VICIA FABA SEED

EXTRACT, PHASEOLUS VULGARIS EXTRACT, INOSITOL: Vegetable origin.

PEG-40 HYDROGENATED CASTOR OIL: Synthetic origin– Vegetable.

AMINOBUTYRIC ACID, RIBOFLAVIN, CYANOCOBALAMIN: Fermentation.

HYDROLYZED SERUM PROTEIN: Animal origin.

POTASSIUM SORBATE, TOCOPHERYL ACETATE, ASCORBYL PALMITATE, RETINYL PALMITATE, NIACINAMIDE,

PANTHENOL, BIOTIN, PYRIDOXINE HCL, THIAMINE HCL: Synthetic origin.

Processing: GMO Free. / No Ethoxylation. / No Irradiation. / No Sulphonation. / No BSE/TSE. / No CMR. /

No SVHC. / No Nanomaterial. / No DEG. / No DEHP. / No Formaldehyde. / No Phthalates. /

Additives: Preservatives: Potassium sorbate. Paraben Free. / Antioxidants: None. / Other additives: None.

Solvents Used: Water, glycerin and isopropyl alcohol.

Appearance: Clear or slightly opalescent liquid.

Colour: Characteristic (yellowish to deep brown).

Odour: Characteristic.

Specific gravity: 1,000 - 1,300 g/cm³ (20°C approx.).

Direct pH value: 4,5 - 6,5 (20°C approx.).

Soluble/ Miscible: Water. Surfactants. Hydroalcoholic, hydroglyceric and hydroglycolic mixtures.

Ecological Information: Sustainable.

Microbial Count: Total aerobics: Max. 300 microorganisms / gram.

Fungi and yeasts: Max. 200 microorganisms / gram.

Pathogens: Total absence in 1 gram.

Suggested Use Levels: 2,0 – 10,0%.

Suggested Applications: Anti-wrinkle and regenerative products.

Properties: Anti-wrinkle and regenerative.

Industrial packing: 1Kg., 5Kg., 25Kg., 225Kg.

Storage conditions: It is very important to keep the product in well closed containers, away from direct sunlight at temperatures not over 15°C. In case of not having refrigerators, store the product in the coolest and free from artificial light area.

Bibliography: - Atlas Ilustrado de Plantas Medicinales y Curativas, Ed. Susaeta.

- Dumont's grosse Kräuter Enzyklopädie.

- Fitocosméticos ALVAREZ CRUZ i BAGUE SERRANO.

- Gran enciclopedia de las plantas medicinales, BERDONCES i SERRA.

- Plantas medicinales, FONT i QUER.

- Proserpio G., Martelli A., Patri GF.; Elementi di Fitocosmeci; Ed. Sepem / Milano 1983.

- Websites.



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OVERVIEW

Human skin dermis is a fibrous tissue formed, essentially, by sclero proteins, collagen and elastine, which are immersed in mucopolysaccharides, an amorphous and viscous material with high water retention capability.

In the case of a young skin, the connective tissue presents adequate elasticity, turgidity and hydration, as a result of the good condition of the three components above described. With time, skin undergoes changes that give rise to the formation of superficial wrinkles and to an internal degradation of the complex dermal structure. In other words, aged skin appears.

GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L. represents a radical improvement in the preventive and palliative treatment of skin aging. It is based on four active substances with maximum effectiveness which strengthen and boost each other.

- OLIGOPEPTIDES, a blend of 80% hexapeptides and 20% octapeptides, both contain eight essential amino acids; that is, those that the human body is unable to synthesize by itself. The structural formula is as shown in (Figure 1.), where n is equal to 4 for the hexapeptide and 6 for the octapeptide.

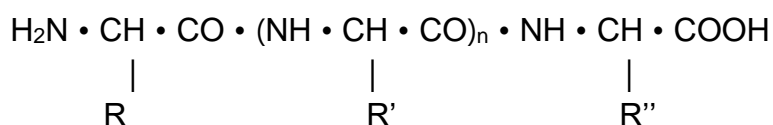


Figure 1. STRUCTURAL FORMULA OF OLIGOPEPTIDES CONTAINED IN GRÜNDELIN COMPLEX by BIOGRÜNDL.

The effect of these oligopeptides on wrinkles is similar to that produced by the factors that take part in wound healing. In fibroblasts and other skin tissue cells oligopeptides increase the protein synthesis, which provides the necessary substratum for the growth and differentiation of the epidermis, to cure and heal wounds. The oligopeptides are identified by the fibroblasts as parts detached from damaged cells. This sets off the defense mechanisms, starting a regenerative process which, in this case, will not affect wounds, but will rather act upon wrinkles and other skin deterioration, resulting from aging and from other unfavorable environmental factors.

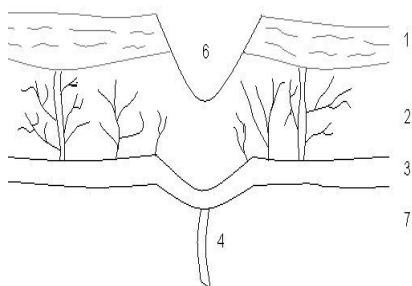
- GABA, Gamma-aminobutyric acid, it does not act on the surface of wrinkles and expression lines, unlike the conventional anti-wrinkle product does, but relaxing the underlying muscles that cause wrinkle formation, since it reduces release

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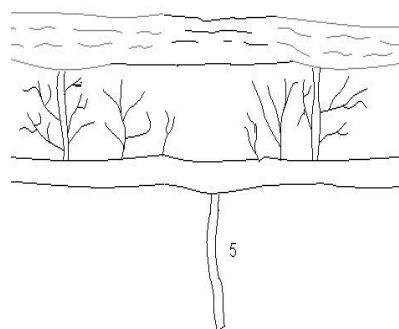
of acetylcholine, necessary substance for the nervous impulse transmission and the resulting muscle contraction.

It relaxes facial muscles through a gradual reduction of neurotransmitters that initiate muscle contraction. This active substance has been shown to be particularly effective in those parts of the face subjected to frequent twists and stretches, such as orbicular and perilabial areas, what is very important in addition, without loss of normal and natural expression. (Figure 2.).

Before application



After application



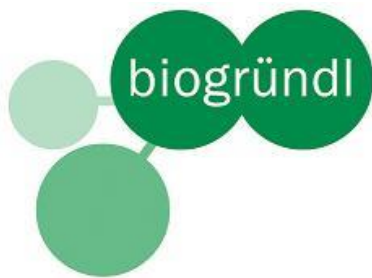
1: Epidermis	2: Dermis	3: Hypodermis	4: Contracted muscle
5: Relaxed muscle	6: Wrinkle	7: Muscle tissue	

Figure 2. GABA. MODE OF OPERATION.

- **ANTIPROTEASES**, in the skin there are enzymes known as proteases (collagenases and elastases) that cause biochemical degradation of collagen and elastin. They are necessary, because they renew the protein structure, they are, however, allowing to eliminate those already damaged parts controlled by antiproteases (anticollagenases and antielastases) that limit their activity to what is strictly necessary.

The degradation of the dermal network and the appearance of wrinkles is a direct consequence of the loss of balance between the activity of proteases and antiproteases, for the benefit of the first. On the other hand, it has shown that in the skin subjected to influences from environment (sun, heat, dryness, pollution, etc.), there is a considerable increase of proteases, provoking negative changes in it. The same occurs in inflamed, damaged or infected skin.

Antiproteases included in GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L. are obtained from sprouted grains of several leguminous plants (soy bean, pea,



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fava bean and bean). Such a blend has shown to be extraordinarily rich in proteins and abundant in antiproteases, which enables a rapid formation of proteins. Said mixture undergoes a complicated extraction process that drags large proportion of antiproteases and an important amount of protein matter, whose composition, within the range of vegetal proteins, is the most similar in amino acids to that of collagen and elastine of the skin. On the other hand, it also contains good ratio of carbohydrates, minerals (P, Mg, Ca, Fe, Zn, K, Na), vitamins (A, B group, C and E) and phytoestrogens (isoflavones).

- VITAMIN COMPLEX. GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L. contains the eleven following vitamins: A, B1, B2, B5, B6, B8, B12, C, E, H, PP. It is a perfectly balanced and very complete blend which includes the most important vitamins for the skin, and which produces noticeable revitalizing, protective and regenerating action of its innermost structure.

USE AND DOSAGE

The incorporation in cosmetics of GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L. is justified by its anti-wrinkle and regenerative properties.

GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L. is a product of proven effectiveness for the immediate regeneration of skin tissue, as well as, for the symptom prevention of skin aging. It does so in a natural way and with contrasting effects from the first applications, without the need to make use of injectables or surgery. It stimulates a fast and lasting tightening effect with marked reduction or attenuation of wrinkles and expression lines.

In summary, GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L. action is as follows:

- OLIGOPEPTIDES set off the defense mechanisms and start a process of dermic regeneration.
- GABA acts upon wrinkles and expression lines, by relaxing the contraction of facial muscles, through a gradual reduction of the neurotransmitters that cause such contraction.
- ANTIPROTEASES restore the balance with the proteases, limiting their activity to what is strictly necessary.
- VITAMIN COMPLEX produces very noticeable revitalizing, protective and regenerative action on the innermost structure of skin tissue.



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If turbidity is observed, it is advisable to previously dissolve the product in a portion of the water provided to manufacture the final product and filter after 12-24 hours.

The recommended concentrations of use are between 2% and 10%. For very special effects the dosage can raise up to 15%.

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear or slightly opalescent liquid.

Colour: Characteristic (yellowish to deep brown).

Odour: Characteristic.

Direct pH value: 4,5 - 6,5 (20°C approx.).

Specific gravity: 1,000 - 1,300 g/cm³ (20°C approx.).

Solubility in water: Fully soluble (20°C approx.).

Solubility in other solvents: Insoluble in organic solvents and lipids. Soluble in surfactants, hydroalcoholic, hydroglyceric and hydroglycolic mixtures.

Heavy metals: No more than 5 mg/Kg.

Sulfated ash: No more than 0,01%.

Chlorides: No more than 0,007%.

Sulfates: No more than 0,002%.

Other information: None.

Total aerobics: Max. 300 microorganisms / gram.

Fungi and yeasts: Max. 200 microorganisms / gram.

Pathogens: Total absence in 1 gram.

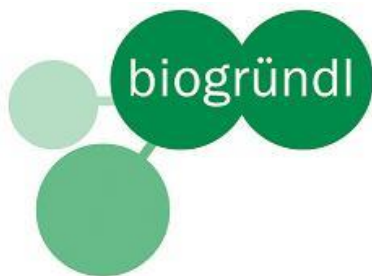
DERMATOLOGY INNOCUOUSNESS

It was performed by the patch test (Patch test) on 10 volunteers. To this purpose, 15% GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L., was added to an O/W emulsion; 0,5g. of this emulsion was poured over the patch and attached on the forearm. It is thus maintained for 24, 48 and 72 hours, after which, the given reaction was evaluated, according to the following table of values:

1. No erythema.
2. Slight erythema.
3. Well defined erythema.
4. Severe erythema.

The result was absence of erythema on the 10 volunteers.

On the recommended concentrations, the product is skin innocuous.



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STORAGE CONDITIONS

It is very important to keep the product in well closed containers, away from direct sunlight at temperatures not over 15°C. In case of not having refrigerators, store the product in the coolest and free from artificial light area.

INCI DENOMINATION

AQUA, GLYCERIN, ISOPROPYL ALCOHOL, GLYCINE SOJA GERM EXTRACT, PISUM SATIVUM EXTRACT, VICIA FABA SEED EXTRACT, PHASEOLUS VULGARIS EXTRACT, PEG-40 HYDROGENATED CASTOR OIL, AMINOBUTYRIC ACID, HYDROLYZED SERUM PROTEIN, TOCOPHERYL ACETATE, POTASSIUM SORBATE, ASCORBYL PALMITATE, RETINYL PALMITATE, NIACINAMIDE, PANTHENOL, RIBOFLAVIN, INOSITOL, BIOTIN, PYRIDOXINE HCL, THIAMINE HCL, CYANOCOBALAMIN.

EFFECTIVENESS TESTS

Assay: Double blind spot trial and subsequent cosmetic evaluation.

Assayed parameters: Anti-wrinkle action.

N (volunteers): 30 (16 ♀ and 14 ♂).

Age (volunteers): 30 - 88 years old.

Left side part to be treated:

Placebo, 30 volunteers, suitable cosmetic base.

Right side part to be treated:

GRÜNDELIN COMPLEX 2%, 15 volunteers, suitable cosmetic base.

Right side part to be treated:

GRÜNDELIN COMPLEX 5%, 15 volunteers, suitable cosmetic base.



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Assayed parameters:

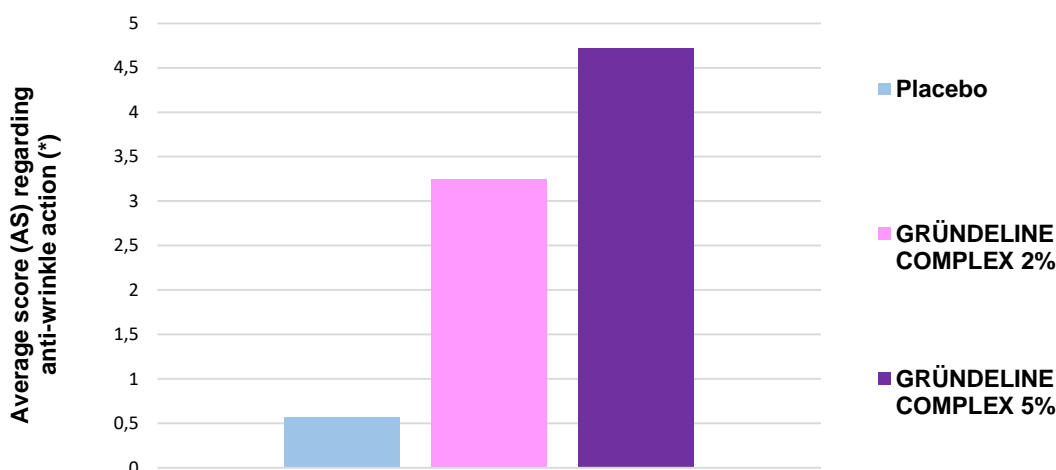
	Assay	N (volunteers)	Age (volunteers)	Placebo	GRÜNDELIN COMPLEX 2%	GRÜNDELIN COMPLEX 5%	Assay performed (Days)	Results measured (Days)
Anti-wrinkle action	Double blind spot trial and subsequent cosmetic evaluation.	N = 30 16 ♀ and 14 ♂	30 - 88	Left side part	Right side part 15 volunteers.	Right side part. 15 volunteers.	D = 30	D' = 1



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SKIN CONDITION EVALUATION AFTER 30 DAYS



(*) Anti-wrinkle action was determined by microscopic observation of depth and length of furrows, wrinkles and expression lines from volunteers.

Total number of days in which the assay was performed (treatment was applied):
D = 10 days (every day during the effectiveness test).

Total number of days in which the results were measured:
D' = 1 day (effectiveness test last day).

Average score:

Worst result: Zero limit value is assigned.

Best result: Five limit value is assigned.

Score is assigned to obtained results between the two limit values.

Average computation for each obtained results group is done:

Placebo, 2% GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L., 5% GRÜNDELIN COMPLEX by BIOGRÜNDL, S.L..

Results meaning:

AS rank between 0 – 1: No significant changes.

AS rank between 1 – 2: Slight improvement regarding placebo.

AS rank between 2 – 3: Appreciable improvement regarding placebo.

AS rank between 3 – 4: Great improvement regarding placebo.

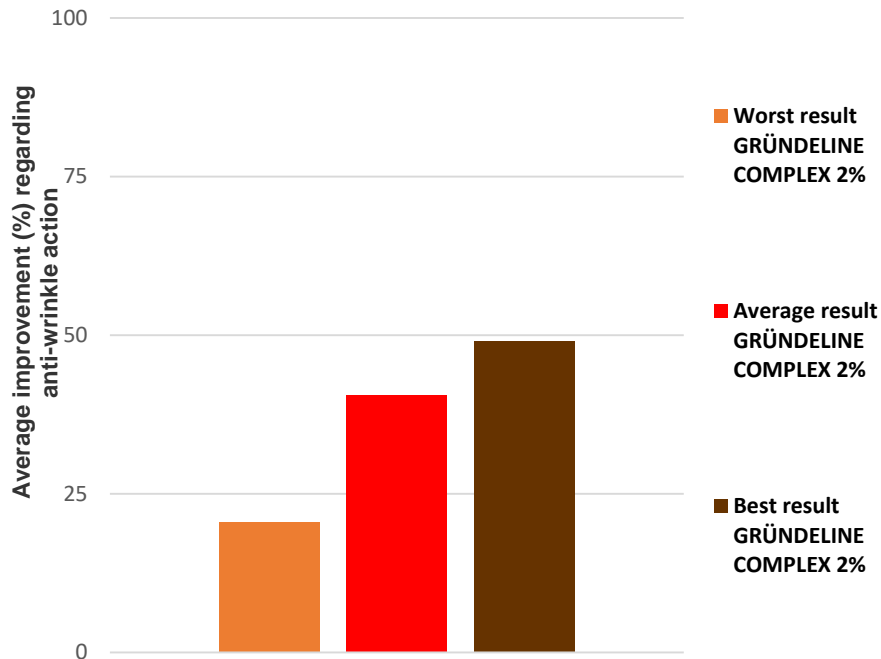
AS rank between 4 – 5: Excellent cosmetic result.



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GRÜNDELIN COMPLEX 2%

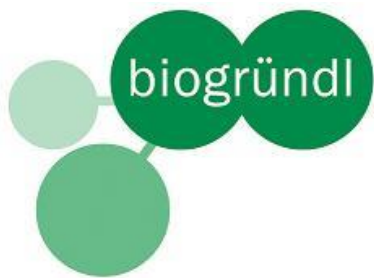


Results:

Worst result GRÜNDELIN COMPLEX 2%: 20,5%.
Average result GRÜNDELIN COMPLEX 2%: 40,5%.
Best result GRÜNDELIN COMPLEX 2%: 49%.

Results meaning:

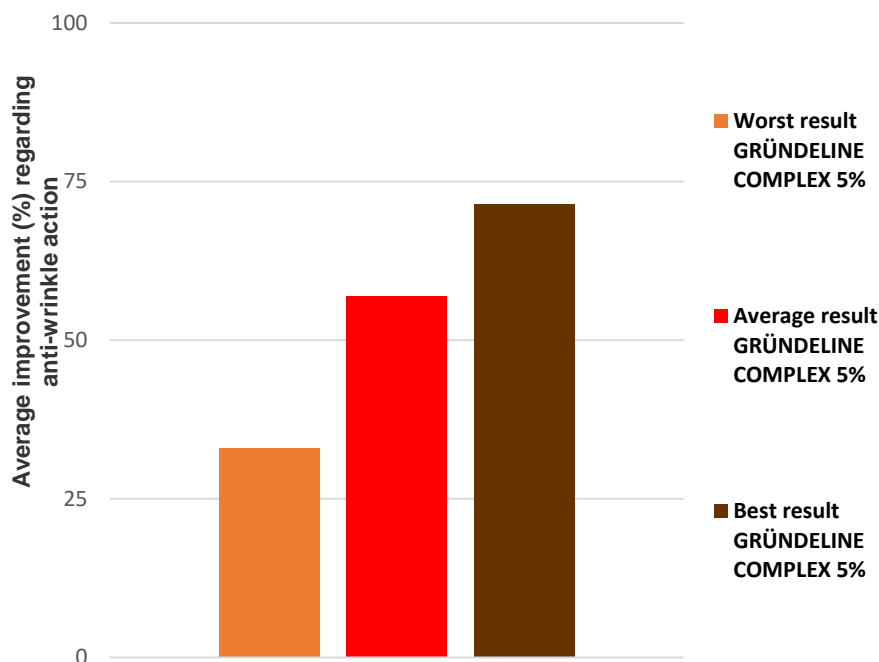
AI rank between < 20%: No significant changes.
AI rank between 21 – 40%: Slight improvement regarding placebo.
AI rank between 41 – 60%: Appreciable improvement regarding placebo.
AI rank between 61 – 80%: Great improvement regarding placebo.
AI rank between > 81%: Excellent cosmetic result.



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GRÜNDELIN COMPLEX 5%



Results:

Worst result GRÜNDELIN COMPLEX 5%: 33%.
Average result GRÜNDELIN COMPLEX 5%: 57%.
Best result GRÜNDELIN COMPLEX 5%: 71,5%.

Results meaning:

AI rank between < 20%: No significant changes.
AI rank between 21 – 40%: Slight improvement regarding placebo.
AI rank between 41 – 60%: Appreciable improvement regarding placebo.
AI rank between 61 – 80%: Great improvement regarding placebo.
AI rank between > 81%: Excellent cosmetic result.