

Bio-Capigen Veg

INCI name

Aqua, Hydrolyzed Soy Protein, Propanediol, Glycerin, Panthenol, Polyquaternium-11, Propylene Glycol, Zinc Pca, Glucose, Ornithine HCl, Niacinamide, Arginine HCl, Panax Ginseng Root Extract, Citrulline, Glucosamine HCl, Pyridoxine HCl, Allium Cepa (Onion) Bulb Extract, Biotin.

Description



A vegetable alternative to animal keratin. BIO-CAPIGEN VEG is a biotechnological complex from botanical origin, designated to reduce the hair loss and stimulate the hair growth.

Its composition is made of:

- ✓ **Sulfopeptides:** To stimulate protein biosynthesis. They also modulate the sebaceous secretion thus helping to maintain the scalp and hair cleaner.
- ✓ **Zinc PCA:** naturally produced by our bodies and one of the components of "natural moisturizing factor", which our skin produces to slow down TEWL.
It performs a sebum inhibiting activity; Di-Hydrotestosterone (DHT), a metabolic product of testosterone, produced by the action of the enzyme 5 a-reductase, stimulates sebaceous glands to produce and secrete sebum. Zinc inhibits 5 a-reductase activity. [1][2]
- ✓ **Arginine HCL:** Arginine being a semi-essential amino acid plays an essential role of producing nitric oxide, which helps in vasodilation of blood vessels. Because of this, blood flow in the capillaries carrying blood to the hair follicles increases. Arginine also stimulates the production of proteins.
- ✓ **Citrulline:** Citrulline is an amino acid found in all hair follicles and is critical in generating strong hair. Citrulline levels have been shown to be effected by human stress, heat treatments, and chemical treatments (especially relaxers and perms). When there is a lower level of Citrulline in the hair follicle, the resulting hair tends to be much thinner, weaker, and contains much less pigment. BIO-CAPIGEN VEG L-Citrulline content ensures growth of healthy hair. [2.1]
- ✓ **Ornithine:** Ornithine is an amino acid, and plays a key role in many cellular processes such as cell migration, proliferation and differentiation. Ornithine expression is associated with cell proliferation and commitment in hair follicle development and hair growth [2.2]

Bio-Capigen Veg

- ✓ **Polyquaternium-11:** It is a quaternized polymer well known for its conditioning and film forming properties.

- ✓ **Hydrolyzed Soy protein:** Source of peptides, amino-acids and oligoelements. The polar nature of proteins gives them the capacity to bind water molecules by establishing hydrogen bonds in a short time, provides nutritive elements to the hair cells. In a long time, improves the cellular metabolism to the germinative cells.

Amino acids content in soy is practically equal to the one in hair keratin.

Soy Sulfopeptides content stimulates protein biosynthesis. They also modulate the sebaceous secretion thus helping to maintain the scalp and hairs cleaner.

Soy Protein increases the ability of the hair to bind moisture and improves the hair strength. It reduces damage due to bleach, perm, or comb.

KERATIN	SOY BEAN
Alanine	Alanine
Arginine	Arginine
Aspartic acid	Aspartic acid
Cystine	Cystine
Glutamic acid	Glutamin Acid
Glycine	Glycine
Histidine	Histidine
Hydroxyproline	x
Isoleucine	Isoleucine
Leucine	Leucine
Lysine	Lysine
Methionine	Methionine
Phenylalanine	Phenylalanine
Proline	Proline
Serine	Serine
Threonine	Threonine
Tryptophan	Tryptophan
Tyrosine	Tyrosine
Valine	Valine

- ✓ **Glucose:** Indispensable energy source for the trichogenesis and cellular activity.
- ✓ **Vitamins from Group B:** reinforces the hair vitality and modulates the lipogenesis.
 - **Vitamin B3 (Nicotinamin/Niacidamine):** is an essential nutrient for healthy skin and hair. Niacinamide increases blood circulation in the scalp, therefore it helps revitalize scalp and stimulate healthy hair growth. As it has anti-inflammatory and antioxidant properties, Niacinamide helps soothe irritation and reduce inflammatory hair loss.[3]
 - **Vitamin B5 (Panthenol):** Natural constituent of healthy hair. It is a hair humectant, increasing the water retention of the keratin structure. It strongly deposits onto the cuticle, making hair easier to comb. It also deep penetrates into the hair cortex, strengthening the hair shaft, and penetrates the scalp providing the hair roots with Pantothenic Acid.
 - **Vitamin B6 (Pyridoxine):** fights seborrhea
 - **Vitamin B8 (Biotin):** Also known as vitamin H or coenzyme R, is a water-soluble B-vitamin. B complex vitamins are needed for healthy skin, hair. Biotin deficiency symptoms include hair loss, and dry scaly skin [4].
- ✓ **Red Onion Extract:** Onion has been use as medicine since very ancient times, and its stimulant properties on hair growth are well known. The effectiveness of topical crude onion juice in the treatment of patchy alopecia areata was studied by *Sharquie KE* and *Al-Obaidi* in 2002:

Bio-Capigen Veg

Patients were divided into two groups. The first one consisted of 23 patients, and were onion juice treated twice a day, during two months. The second one consisted of 15 patients and were treated with a Control (tap-water), for the same time a periodicity. After two weeks of treatment with crude onion juice, a re-growth of terminal coarse hairs started. At four weeks, hair re-growth was seen in 73.9% of patients and, at six weeks, the hair re-growth was observed in the 86.9% of patients. Also, it was significantly higher among males (93.7%) compared to females (71.4%). [4.1]

The Main active substances contained in Onion extract are **phytochemicals**:

- ✓ Sulphur-containing compounds: disulphides, trisulphides, cepaene, etc
 - ✓ Flavonoids: Quercetin is the major flavonol present in onion. These compounds are known to be potent free radical scavengers, antioxidants, and anti-microbial.
 - ✓ Other active principles: Oligofructans, prostaglandins, sterols, steroidal saponins, and vitamins C, B1, D and E.
- ✓ **Ginseng Extract:** The hair grow stimulatory effect was shown by Matsuda et al. (2003) [5]. They conclude that Ginseng Radix possesses hair growth promoting activity, attributable to the ginseng saponin components. Ginseng is known for its ability to prevent hair loss and make it grow. It is a tonic with stimulating and aphrodisiac properties.

Primary active components of Panax ginseng are a group of 30 different triterpene saponins, also referred as ginsenosides.

Clinical Efficacy: In-vitro keratin stimulation efficacy test

Analysis of krt1 expression in human keratinocytes treated with Bio-Capigen Veg.

The **Keratin** genes family belongs to the superfamily of fibrous structural proteins, known as Intermediate Filaments. This protein is the key structural component of hair and nails.

Keratin has become a common cosmetic ingredient. Studies have shown that topical application of hydrolysed keratin gives significant increases in skin elasticity and hydration.

However, there is a limitation in this cosmetic use of keratin. In fact, **larger keratin structures cannot penetrate the skin** used as moisturisers. **Compounds inducing Keratin expression in endogenous cells would better serve this purpose.**

Purpose:

Estimation of the **induction of KRT1** in human keratinocyte cells, treated with BIO CAPIGEN VEG serum.

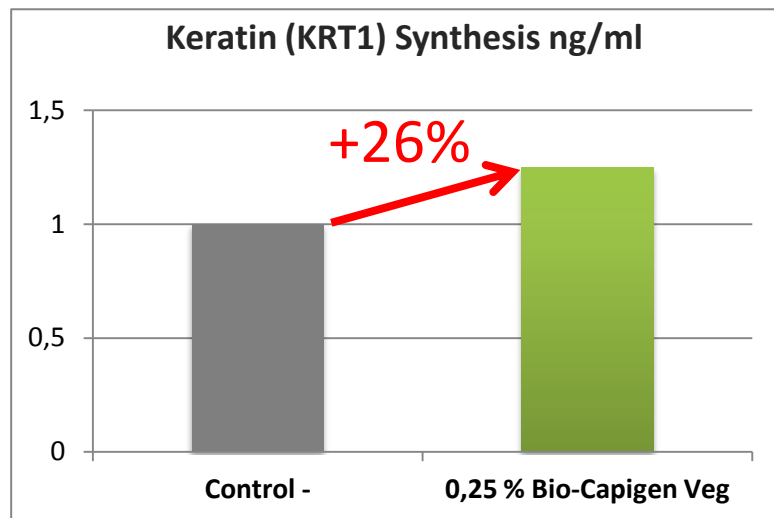
Bio-Capigen Veg

Methodology:

Human keratinocyte cells were incubated with non-toxic concentrations of Bio-Capigen serum. After an incubation period of 24 h, total proteins were purified and quantified. KRT1 expression was determined using a specific antibody in an ELISA assay.

Results:

BIO-CAPIGEN VEG serum at 0,25% increased KRT1 expression +26 % when compared with untreated control:



Cosmetic Applications:

- a) Decreases hair loss rate and stimulation of its growth:
 - ✓ Encourages cellular metabolisms.
 - ✓ Improves oxygen consumption at hair cells.
 - ✓ Stimulates microcirculation at the scalp.
- b) Improves the esthetic look of the hair:
 - ✓ Decreases the sensation of oily hair.
 - ✓ Revitalizes hair fibers.
 - ✓ Improves the aspect of dry and non flexible hair.
- c) Ameliorates seborrheic scalps and decreases dandruff:
 - ✓ Provokes dandruff dispersion.
 - ✓ Decreases itching sensation.
 - ✓ Modulates sebaceous secretion.

BIO-CAPIGEN VEG can be used at lotions, gels, creams, shampoos, or at any aqueous or hydro-alcoholic balsams.

Bio-Capigen Veg

Dosage – Solubility – Processing

A- DOSAGE:

From 3 to 10%. It can be used at higher concentrations at, for example, shock treatments in ampoules.

B- SOLUBILITY:

Hydro-soluble and compatible with alcohol up to 30%. Insoluble in oils.

C- PROCESSING:

BIO-CAPIGEN VEG is compatible with most of the raw materials normally used in cosmetics, with a pH range of 4 to 8. Nevertheless, it is the duty of the formulator to make sure of the stability of the formulae with the necessary tests.

It would be preferably incorporated into cosmetic preparations during the finishing process, at the cooling phase at around 40 °C.

Analytical Data

- APPEARANCE: Limpid liquid
- pH: 5,50 – 6,50
- Dry extract: 8,00 – 12,00%
- Density (at 20 °C): 1,030 – 1,050
- Refractive index (at 20 °C): 1,350 – 1,370
- Total nitrogen: 0,60 – 0,90%
- PRESERVATIVES: Paraben Free.
- MICROBIOLOGY: Maximum 50 CFU/gram (not pathogenic)
- TOLERANCE: Excellent
- STORAGE: Store at room temperature, dry and away from light.

If original container is opened, to avoid secondary microbiological contamination handle with special care.

Bio-Capigen Veg

References

[1] D. Stamatiadis, Marie-Claire Bulteau-Portois and Irene Mowszowicz, British Journal of Dermatology, 119, 627-632 (1988)

[2] Yasuro Sugimoto, Irma Lopez-Solache, Fernand Labrie and Van Luu-The, Journal of Investigative Dermatology, 104, 775-778 (1995)

[2.1] The origin of citrulline-containing proteins in the hair follicle and the chemical nature of trichohyalin, an intracellular precursor. Rogers GE, Harding HW, Llewellyn-Smith IJ. Biochim Biophys Acta. 1977 Nov 25;495(1):159-75.

[2.2] Dynamic expression of ornithine decarboxylase in hair growth. Michelle J. Nancarrow Antonietta Nesci, Philip I. Hynd, Barry C. Powell, Department of Animal Science, University of Adelaide, Waite Campus, Glen Osmond, South Australia 5064, Australia

[3] A novel cosmetic approach to treat thinning hair. Davis MG1, Thomas JH, van de Velde S, Boissy Y, Dawson TL Jr, Iveson R, Sutton K.

[4] *Vitamin H (Biotin)* | University of Maryland Medical Center. University of Maryland Medical Center

[4,1] Sharquie KE, Al-Obaidi HK. Onion juice (*Allium cepa* L.), a new topical treatment for alopecia areata. J.Dermatol, 2002; 29 (6): 343-346

[5] Promotion of hair growth by ginseng radix on cultured mouse vibrissal hair follicles. Hideaki Matsuda, Miho Yamazaki, Yusuke Asanuma and Michinori Kubo.