



Bioboosting Feed: Biotin, Vitamin and Caffeine Boosting Delivery system.

The hair booster

Consumer needs

Men and women care about hair strength and growth

46% of men wish that their hair would be **thicker**.

26% of men worry about **hair loss** when shampooing their hair.

70% of men are affected by **hair loss**.



19% of females complain about **hair thinning**.

11% of females complain about a **lack of hair growth** and wish their hair would grow **faster**.

40% of women are affected by **hair loss**.

Biotin

An effective combination to boost your hair

Biotin

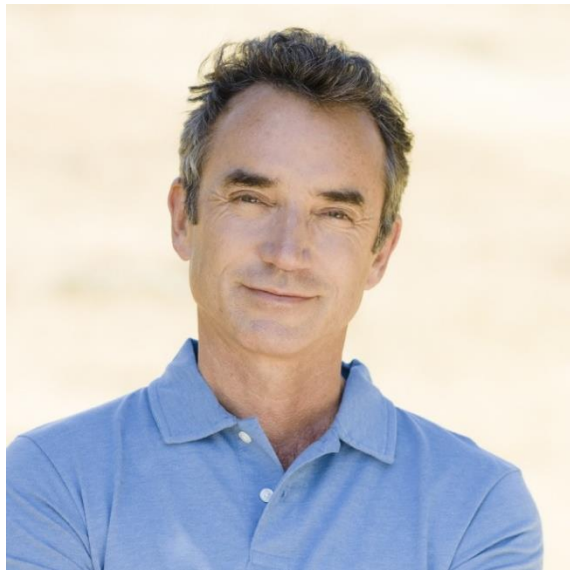
Metabolic processes of keratinocytes

Linoleic acid

Synthesis of ceramides 1 and 2, involved in the mechanical stability of the hair

D-Panthenol

Hair thickness and regeneration of damaged hair



Vitamin E

Decelerating keratin and hair pigments photooxidative decomposition

Caffeine

Microcirculation and supply of nutrients to hair and scalp



Biotin

Liposomally encapsulated combination of actives conducive to improved hair density and growth conditions.

Contributes to improve hair density, normalizing the ratio of anagen and telogen hair growth phases

Improved delivery of active ingredients into the scalp and hair root area

Provides visible and perceptible results

Bioboosting Feed

Composition and properties



A cosmetic delivery system based on liposomes to deliver vitamins and caffeine to the hair bulbs

INCI Water/Aqua; Alcohol; Panthenol;
Lecithin; Tocopheryl Acetate; Caffeine;
Biotin


Recommended usage level 2 - 10%

Appearance beige, viscous, fluid

Odor ethanolic, lecithin typical

China IECIC listed

Our studies Summary

	<i>Ex vivo</i> bioavailability study	<i>In vivo</i> hair loss prevention study & self-assessment
Test area	<i>Ex vivo</i> skin	12 panelists (6 female, 6 male, aged 31 – 60)
Test formulation	Bioboosting feed delivery system loaded with hydrophilic and lipophilic fluorescent markers vs. unencapsulated markers at equivalent concentrations.	Hair tonic formulation with 10%
Time of measurement	Measurements after 8 and 16 hours of penetration	Start  24 weeks
Test design	Determination of penetration profile of hydrophilic fluorescent marker CF (6-Carboxyfluorescein) and lipophilic fluorescent marker DiL* into the skin and hair root area using confocal laser scanning microscopy on cross-sectional cuts of skin biopsies.	Application once daily over 24 weeks. After 6, 12 and 18 weeks measurement of ratio of anagen to telogen phase hair and hair density supported by photo-documentation. Panelist self-assessment on cosmetic acceptance, efficacy and tolerance after 24 weeks.
Results	enhances the bioavailability of hydrophilic and lipophilic actives for hair care applications. <small>* IUPAC name: (2Z)-2-[(E)-3-(3,3-dimethyl-1-octadecylindol-1-ium-2-yl)prop-2-enylidene]-3,3-dimethyl-1-octadecylindole; perchlorate</small>	<ul style="list-style-type: none">- Normalization of ratio between hairs in anagen and telogen phase to the healthy 80:20 state- Increase of hair density by 9% in male and 16% in female subjects Subjective scoring of good sensory results for applied hair tonic formulation.

Bioboosting Feed...

Bioavailability



... improves the delivery of hydrophilic and lipophilic active ingredients into the scalp and hair root area

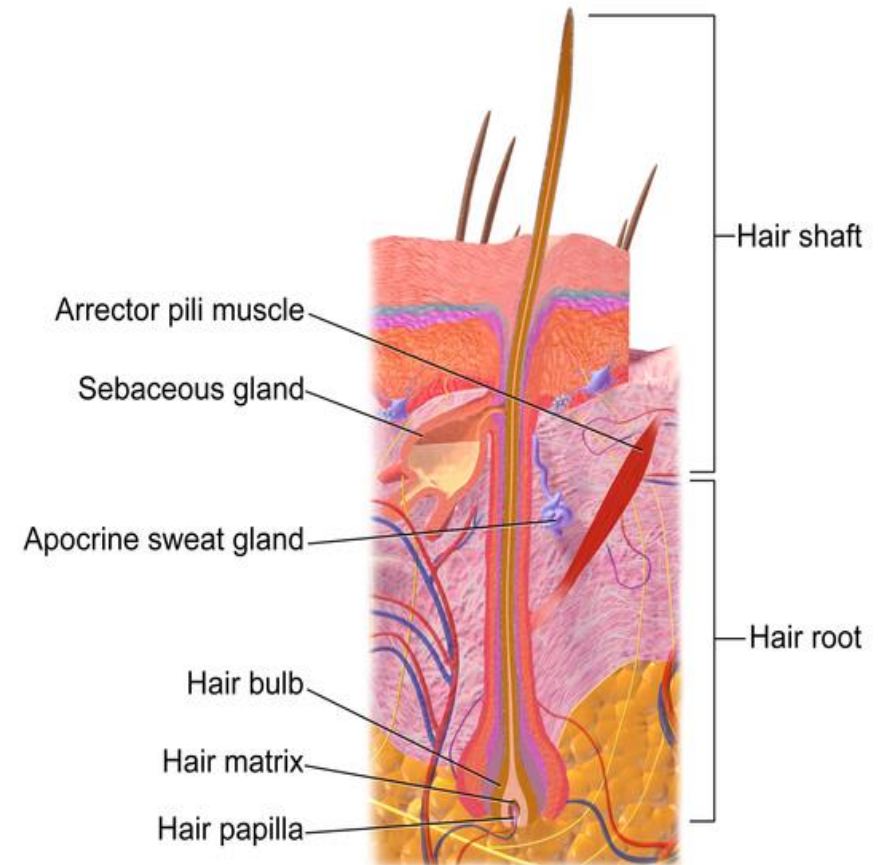
Hair loss prevention



... contributes to improve hair density, normalizing the ratio of anagen and telogen hair growth phases and provides visible and perceptible results during application

Hair structure

- A hair follicle is a mammalian skin organ that produces hair. Stem cells are responsible for hair production.
- The **hair papilla** is a large structure at the base of the hair follicle. The papilla is made up mainly of connective tissue and a capillary loop. Cell division in the papilla is either rare or non-existent.
- **Hair matrix** around the papilla is the hair matrix, a collection of epithelial cells often interspersed with the pigment-producing cells, the melanocytes. Cell division in the hair matrix produces the cells that form the major structures of the hair fiber and the inner root sheath.
- The **hair bulb/ bulge** is located in the outer root sheath at the insertion point of the arrector pili muscle. It houses several types of stem cells, which supply the entire hair follicle with new cells, and take part in healing the epidermis after a wound.



Hair Follicle Cycling

Hair grows in cycles of various phases :

- **Anagen phase:** active growth phase of hair follicles during which the hair root is dividing rapidly. Typical growth rate: about 1 cm every 28 days for 2– 7 years. Growth rate and remain in this stage are genetically determined. At the end of the anagen phase an unknown signal causes the follicle to go into the catagen phase.
- **Catagen phase (CP):** short transition stage occurring at the end of the anagen phase, signaling the end of the active growth of hair. CP lasts for about 2–3 weeks while the hair converts to a club hair. Club hair is formed during CP when the part of the hair follicle in contact with the lower portion of the hair becomes attached to the hair shaft. This process cuts the hair off from its blood supply and from cells producing new hair. When a club hair is completely formed, the hair follicle enters the telogen phase.
- **Telogen phase:** resting phase of hair follicle. When the body is subject to extreme stress, up to 70% of hair can prematurely enter the telogen phase and causing a noticeable loss of hair. This condition of stress is called *telogen effluvium*. The club hair is the final product of a hair follicle in the telogen stage, and is a dead, fully keratinized hair. 50- 100 club hair are shed daily from a normal scalp.
- Normally up to 90% of the hair follicles are in anagen phase while, 10–14% are in telogen and 1–2% in catagen. The cycle's length varies on different parts of the body.

