

Eyelash-Enhancing Products: A Review

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Long prominent eyelashes draw attention to the eyes and are considered a sign of beauty. Women strive to achieve ideal lashes through various modalities, including cosmetics, cosmeceuticals, and pharmaceuticals. The booming beauty industry has introduced many cosmetic and cosmeceutical products with claims of enhancing eyelash growth; however, many of these products have not been tested for efficacy or safety and are promoted solely with company- and/or consumer-based claims. The only pharmaceutical approved by the US Food and Drug Administration for eyelash growth is bimatoprost ophthalmic solution 0.03% (Latisse, Allergan, Inc). In this article, eyelash physiology, causes of genetic and acquired trichomegaly, and pharmaceutical and cosmeceutical products that claim eyelash-enhancing effects are reviewed.

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Eyelashes decorate the eyes and crystallize the beauty of the face.¹ Long and lush eyelashes in particular are considered a sign of beauty. Women strive to achieve more pronounced eyelashes using a variety of techniques. Cosmetics are the mainstay of eyelash enhancement and include makeup (eg, mascara, eye shadow, eyeliner) and eyelash extensions. According to the US Food and Drug Administration (FDA), cosmetics are “articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness, or altering the appearance.”² Although the FDA does not officially recognize the term *cosmeceutical*, this category represents another group of eyelash-enhancement products. As opposed to cosmetics,

cosmeceuticals contain active ingredients that are intended to produce beneficial physiologic effects through medicinal properties.^{3,4} Cosmeceuticals fall in the gray area between inert cosmetics and pharmaceuticals. Drugs are defined by the FDA as “articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease.”² A product can be both a cosmetic and a pharmaceutical; determination of the category depends on the manufacturer’s claims for intended use, consumer perception, and ingredients.⁵ The primary motive for companies to market a certain product as a cosmetic versus a drug is financial. Multiple regulatory hurdles must be overcome for drug approval, marketing, and manufacturing. For example, development of a new drug takes 7 to 15 years and costs approximately \$800 million, whereas a new cosmetic takes 3 to 5 years for development and costs roughly \$2 to \$3 million.^{4,6} Accordingly, some products that are approved as cosmetics, which should be physiologically inert, contain ingredients that affect skin structure or function.⁴

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ANATOMY AND PHYSIOLOGY

We know less about eyelashes than we do about scalp hair. Both share similarities as well as differences. The

terminal eyelash is curved, which varies depending on ethnicity. For instance, Asian individuals have straighter thicker eyelashes than white individuals.⁷ Eyelashes develop around the 7th and 8th weeks of gestation.⁸ On the upper eyelid, eyelashes grow in 2 to 3 rows (approximately 100–150 lashes)⁹ and there are fewer eyelashes on the lower lid (mean, 75–80 lashes).^{7,8} Eyelash length rarely exceeds 10 mm due to an anagen (growth) phase that is much shorter than scalp hair.⁸ The average eyelash cycle lasts 3 to 12 months.^{7,10,11} The anagen phase is approximately 1 to 3 months, while the telogen (resting) phase is 2 to 9 months.^{8,9} Melanogenesis of hair follicle melanocytes and transfer of pigment to medullary and cortical cells happen during the anagen phase.¹¹ Before entering the telogen phase, hair follicles undergo catagen, which is a short transition phase (approximately 15 days) during which follicular cells undergo apoptosis.⁹ During the telogen phase, the hair is shed. Approximately 59% to 85% of eyelashes usually are in the catagen (transition) phase, depending on location (upper vs lower eyelid), with a growth to rest ratio of 2.4 to 1 and 7.5 to 1 for the upper and lower lids, respectively.¹⁰ Transmission electron microscopy shows that the eyelash shaft is similar in structure to scalp hair with 3 components: cuticle, cortex, and medulla.¹² Unlike scalp hair, eyelashes do not have arrector pili musculature, but they do contain various glands. Unilobar sebaceous glands known as Zeis glands are present at the margin of the eyelid. Meibomian (or tarsal) glands also are unilobar sebaceous glands; located at the rim of the eyelid, these glands secrete an oily substance that prevents tear film from evaporating. Moll glands are modified apocrine glands that are found at the base of the eyelash. Unlike scalp hair, eyelashes do not turn gray or white, and their growth is not influenced by androgens.^{13,14}

GENETIC TRICHOMEGLY

Trichomegaly may occur as an isolated genetic phenomenon or in association with a syndrome (Table 1). Several genetic disorders have been associated with trichomegaly.¹⁵ Oliver-McFarlane syndrome, also known as chorioretinopathy-pituitary dysfunction, is a rare entity characterized by persistent trichomegaly, retinitis pigmentosa (chorioretinal degeneration), short stature due to growth hormone deficiency, cerebellar dysfunction, and mental retardation.²²⁻²⁴ This syndrome is rare, and the associated genetic abnormality has not yet been described. Congenital cone-rod dystrophy in conjunction with trichomegaly and hypertrichosis was described by Jalili¹⁶ in 1989. Vitreochorioretinal degeneration²⁵ and Cornelia de Lange syndrome (also known as Brachmann-de Lange or de Lange syndrome) also have

been associated with trichomegaly. The main features of Cornelia de Lange syndrome include arched eyebrows, synophrys (unibrow), ptosis, trichomegaly, anteverted nares, elongated philtrum, thin upper lip, micrognathia, and microcephaly. Additionally, multiple other organs may be involved from the cardiac, gastrointestinal, genitourinary, and central nervous systems.^{17,18} Another genetic disorder with eye findings as well as trichomegaly is Goldstein-Hutt syndrome, which is characterized by cataracts, hereditary spherocytosis, and trichomegaly.^{19,27} Hermansky-Pudlak syndrome and oculocutaneous albinism are both pigmentary dilution disorders also associated with trichomegaly.^{20,21}

CAUSES OF ACQUIRED TRICHOMEGLY

Systemic Disease

Trichomegaly often is reported in human immunodeficiency virus (HIV) and AIDS patients, especially with more advanced disease.³⁰⁻³⁵ Trichomegaly in this setting was first described in 1987 by both Casanova et al³¹ and Janier et al.³⁶ The exact mechanism for disease still is unclear, but severe malnutrition, immunodeficiency, intolerance to zidovudine, abnormal liver function, and stimulation by a viral protein (especially when viral counts are high) have all been considered as possibilities.^{30,35,37} Highly active antiretroviral therapy also may inhibit eyelash growth, but its mechanism is still unclear. Trichomegaly that is associated with HIV may be a sign of end-stage infection and may indicate a poor prognosis, though a study by Almagro et al³⁰ failed to find a relationship between eyelash length and CD4 lymphocyte count, HIV RNA viral load, or Centers for Disease Control and Prevention category. Studies indicate that trichomegaly can occur in 3% to 6% of HIV patients, even when zidovudine is not being used.^{30,65} Trichomegaly also has been associated with visceral leishmaniasis (kala azar).³⁸ Interestingly, connective tissue diseases such as dermatomyositis and lupus erythematosus may demonstrate associated trichomegaly, particularly in women younger than 30 years.^{28,39} Santiago et al³⁹ reported a case in which trichomegaly was the presenting sign of systemic lupus erythematosus. It is hypothesized that an alteration in the immune system or the induction of specific cytokines by CD4 helper T cells could be the cause of trichomegaly.³⁹ Decreased caloric intake and malnutrition also have been associated with trichomegaly.^{26,27,39} Various correlating eye conditions also have been reported, including uveitis, vernal keratoconjunctivitis, ocular inflammation, and enucleation and evisceration following surgery.^{29,41,42} Inflammatory mediators have been shown to promote hair growth in animal models and in vitro human studies.^{66,67} Metabolic and endocrine disorders also have been implicated.^{27,40} In

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some cases, trichomegaly may represent a paraneoplastic sign.²⁶

Systemic Medication

Multiple systemic drugs have been reported to cause trichomegaly (Table 1). Epidermal growth factor receptor (EGFR) inhibitors have been well-known to cause hair

abnormalities (87.5%), facial hypertrichosis (56%), and eyelash trichomegaly (62.5%).⁶⁸ Trichomegaly has been documented in patients being treated with cetuximab, erlotinib, panitumumab, and gefitinib,^{45,46,52,68,69} and can persist even after cessation of treatment.⁶⁹ Epidermal growth factor receptor is a receptor tyrosine kinase that is normally expressed in the basal and suprabasilar layers

TABLE 1

Causes of Trichomegaly

Genetic	Acquired	Drugs
Barber-Say syndrome ¹⁵	Acrodynia ²⁶	Acetazolamide ^{27,43}
Cantu syndrome ¹⁵	Alopecia areata ²⁷	Benoxyprofen ⁴⁴
Coffin-Siris syndrome ¹⁵	Anorexia nervosa ²⁶	Cetuximab ^{45,46}
Cone-rod dystrophy ¹⁶	Chronic liver disease ²⁸	Cyclosporine ⁴⁷⁻⁵¹
Cornelia de Lange syndrome ^{17,18}	Dermatomyositis ²⁸	Diazoxide ^{26,27}
Fetal alcohol syndrome ¹⁵	Surgical enucleation and evisceration ²⁹	Erlotinib ⁵²
Goldstein-Hutt syndrome ¹⁹	HIV/AIDS ³⁰⁻³⁷	Gefitinib ⁵³
Hermansky-Pudlak syndrome ²⁰	Kala azar ^{28,38}	Interferon alfa-2a and -2b ⁵⁴⁻⁵⁶
Isolated trait ¹⁵	Metastatic adenocarcinoma ²⁶	Minoxidil ^{26,27}
Kabuki and floating harbor syndromes ¹⁵	Malnutrition ^{26,27,39}	Panitumumab ⁵⁷
Oculocutaneous albinism ²¹	Porphyria ⁴⁰	Penicillamine ^{26,27}
Oliver-McFarlane syndrome ²²⁻²⁴	Pretibial myxedema ²⁷	Phenytoin ^{26,27}
Vitreochorioretinal degeneration ²⁵	Systemic lupus erythematosus ³⁹	Psoralen ^{26,27}
	Uveitis ⁴¹	Steroids ^{26,27}
	Vernal keratoconjunctivitis ⁴²	Streptomycin ^{26,27}
		Sulfate ^{27,41,43}
		Tacrolimus ⁵⁸
		Topiramate ⁵⁹
		Zidovudine ^{35,60}
		Prostaglandin analogues
		Latanoprost ^{11,61}
		Bimatoprost ⁶²⁻⁶⁴
		Travoprost ⁶²

Abbreviation: HIV, human immunodeficiency virus.

of the epidermis, sebaceous glands, and outer root sheath of the hair follicle.⁷⁰ It is a transmembrane complex that helps regulate cell proliferation, differentiation, apoptosis, angiogenesis, and migration.^{69,70} Hair growth is inhibited by EGFR because it mediates termination of the anagen phase. As expected, downregulation of EGFR stimulates follicular formation.^{71,72} Multiple reports indicate that interferon alfa-2a and -2b are stimulators of eyelash growth.⁵⁴⁻⁵⁶ Cyclosporine is well-known to induce hypertrichosis and trichomegaly.⁴⁷⁻⁵⁰ Disproportionate enlargement of accessory eyelashes due to cyclosporine resulting in ocular irritation also has been reported.⁴⁷ Other medications that may induce trichomegaly are listed in Table 1, including antiepileptics, antihypertensives, immunomodulators, and antibiotics.^{11,26,27,41,43-46,52-64,69}

Topical Pharmaceuticals

Prostaglandin analogues (PGAs) are potent ocular hypotensive agents that are used for the treatment of glaucoma.⁷³ In 1994, unoprostone isopropyl (Rescula, CIBA Vision Corporation, a Novartis AG company) became the first commercially available PGA. Latanoprost (Xalatan, Pfizer Inc) became available in 1996; shortly after its introduction, Johnstone⁶¹ reported trichomegaly and increased pigmentation with unilateral usage. In 2001, 2 additional PGAs—bimatoprost ophthalmic solution 0.03% (Lumigan, Allergan, Inc) and travoprost ophthalmic solution 0.004% (Travatan Z, Alcon, a Novartis AG company)—became available for the treatment of ocular hypertension. Patients observed increased eyelash growth in trials that examined bimatoprost's ability to reduce intraocular pressure, which led Allergan, Inc, to conduct a phase 3 multicenter, double-blind, randomized, placebo-controlled study to assess the safety and efficacy of bimatoprost for this indication.⁷⁴ The global eyelash assessment scale was created for this trial and is proven to have good interobserver and intraobserver reliability.⁷⁵ In 2008, bimatoprost ophthalmic solution 0.03% (Latisse, Allergan, Inc) was approved by the FDA for the treatment of eyelash hypotrichosis.⁷⁶ It currently is the only FDA-approved treatment to stimulate eyelash growth, thickness, and darkness.⁷⁷ Latanoprost and travoprost both are ester prodrugs of prostaglandin F_{2α}, while bimatoprost is a prostamide (amide prodrug of 17-phenyl-PGF₂).⁷³

The exact mechanism by which bimatoprost induces hair growth remains elusive. Studies in mice have shown a greater proportion of follicles in the anagen phase and a simultaneous decrease of follicles in the telogen phase.⁹ Early commencement or prolongation of the anagen phase may be responsible. Bimatoprost also results in increased eyelash thickness and larger dermal papilla

and hair bulb diameter in early anagen follicles.⁹ The darkening of eyelashes may result from increased melanogenesis, possibly caused by increased tyrosinase enzyme activity and gene transcription.^{9,78,79} This same effect has been demonstrated in iris pigmentation studies; however, it has been noted that increased pigmentation of the eyelashes is different than increased pigmentation in the iris. Pigmentation of the eyelashes is directly related to melanocyte differentiation.¹¹ Bimatoprost does not affect the number of follicles, as they remain constant throughout a person's life. The number of eyelashes increases in appearance because of a quicker transition to the anagen phase, existing lashes remaining longer, and an increased number of vellus hairs becoming terminal hairs.^{9,80} Bimatoprost and travoprost have a greater effect on eyelash growth than latanoprost.⁶² In addition to objective measurements of eyelash growth, users of bimatoprost noted greater length, thickness (fullness), and darkness of eyelashes.⁸¹ Bimatoprost and latanoprost for the treatment of alopecia areata have had mixed results.^{21,82-85} Some studies have indicated that less severe disease (<50% hair loss) may respond better.⁸⁴ Recently, a study using injected bimatoprost for the treatment of androgenetic alopecia was not successful.⁸⁶ Eyebrow growth and enhancement has been documented with bimatoprost.⁸⁷

The long-term safety of bimatoprost has been established based on 32 clinical trials involving more than 5700 patients over 13 years.^{74,75} However, patients and physicians should be aware of potential side effects (Table 2). The most well-known side effect is iris pigmentation, which is rare. It is more likely to occur

TABLE 2
Potential Side Effects of Bimatoprost

More Common Side Effects	Less Common Side Effects
Conjunctival hyperemia	Exacerbation of intraocular inflammation
Dry eye	Iris pigmentation
Eyelid erythema	Macular edema
Eyelid hyperpigmentation	Meibomian gland dysfunction
Eye pruritus	Periorbital hypertrichosis
Ocular irritation	Periorbital fat atrophy

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with chronic use and when prostaglandin analogues are directly administered into the eye, as is the case with Lumigan but not Latisse, which is applied to the eyelids.⁷⁹ Eyelid pigmentation also is possible, with onset occurring within 3 to 8 weeks for Latisse and 3 to 6 months for Lumigan.⁸⁸⁻⁹⁰ Regional skin hypertrichosis may occur from application outside the treatment area.^{80,91} The most common side effects of Latisse include eye pruritus, conjunctival hyperemia, eyelid hyperpigmentation, ocular irritation, dry eye symptoms, and erythema of the eyelid.⁸⁰ Deepening of the upper eyelid sulcus has been well-documented with instilled prostaglandin analogues and is the result of periorbital fat atrophy.⁹²⁻¹⁰¹ This side effect was originally reported in 2004 by Peplinski and Albiani Smith⁹⁵ and is potentially mediated by prostaglandin-induced fat atrophy, though the mechanism has not been completely elucidated.⁹⁴ Other potential side effects include precipitation of meibomian gland disease, exacerbation of intraocular inflammation, and macular edema.^{91,102}

Topical Cosmetics and Cosmeceuticals

Cosmetics and cosmeceuticals are the mainstay of eyelash enhancement. The global cosmetic and toiletries market is a multibillion dollar industry (\$155 billion) with color cosmetics alone claiming \$24 billion. The fastest growing color cosmetics sector in the United States is eye makeup.¹⁰³ Important considerations in cosmeceutical development are safety and efficacy. Because cosmeceuticals are not recognized as distinct entities by the FDA, they fall under the category of cosmetics, meaning that, unlike drugs, safety and efficacy testing are not required. Some cosmeceutical products contain ingredients that have proven safety records, while others undergo animal testing to determine the safety of new ingredients. At this time, no regulations for safety or efficacy are in place for cosmeceuticals. Safety and efficacy data on many over-the-counter eyelash enhancers are scant. Some products claim results from safety and efficacy studies but many rely on anecdotal and consumer reviews. Additionally, almost all of these products contain multiple key ingredients, and it is difficult to attribute eyelash stimulation (if it actually occurs) to a specific element. In dermatology, most cosmeceutical products traditionally are marketed to protect against photodamage and aging, thus most research has been centered in these areas. Critical evaluation and research of elements and ingredients claimed to enhance eyelash growth clearly are lacking.

A large number of cosmeceutical eyelash enhancers currently are on the market (Table 3). Analysis of 36 of the most popular ingredients revealed several frequently appearing categories, one of the most common being

plant derivatives and extracts. Plant extracts (eg, roots, leaves, seeds, pulp, flowers, bark, twigs, stems) generally are safe, especially those that normally are considered appropriate for oral consumption by humans.¹⁰⁴ However, most research regarding plant extracts and their antioxidant effects has been related to antiaging. There has been little critical evaluation of plant extracts regarding eyelash growth. Additionally, these products usually contain more than 1 plant extract and in 1 case as many as 19 plant extracts. In evaluation of these products, it is difficult to determine which plant derivative is responsible for the enhancement effects. Additionally, several factors can influence the efficacy of individual ingredients, including growth and harvest conditions (ie, time from harvest to transport, storage and shipping conditions), preparation methods (ie, crushing, boiling, grinding, pressing, drying), final extract status (ie, liquid, powder, paste, syrup, crystal), and concentration.

Another common ingredient category is vitamins, including A, B (thiamine, riboflavin, niacin, panthenol, pyridoxine, biotin, folic acid, cyanocobalamin), C, and E. Some of these vitamins have been shown in prior studies to have antiaging and facial rejuvenation effects^{105,106}; however, their impact on eyelash growth has not been established.

Amino acids and peptides (short amino acid chains) are another major ingredient category. The different types of peptides are signal peptides, carrier peptides, and neurotransmitter-inhibiting peptides.¹⁰⁷ Stimulation of dermal fibroblasts, copper transport, and inhibition of cellular calcium-dependent exocytosis may produce antiaging effects. Dermal fibroblast stimulation results in an increase in collagen production. Copper is a cofactor in the antioxidant enzyme superoxide dismutase, the collagen and elastin enzyme lysyl oxidase, and cytochrome c as well as tyrosinase. Inhibition of calcium-dependent exocytosis may reduce muscle contraction and improve wrinkles.¹⁰⁷ We did not find any in vitro or in vivo studies specifically evaluating eyelash hair growth or enhancement properties of the above listed ingredients. Several eyelash-enhancing cosmeceutical products were found to contain prostaglandin analogues. Ingredients often are ambiguous in eyelash enhancers that are produced overseas and purchased online. Both the safety and efficacy of these formulations are questionable.

A special consideration when applying all topical agents to the eyelid area is the possibility of eyelid dermatitis, which is especially important given the long list of ingredients in many eyelash-enhancing products. Because skin on the eyelids is thin, it is highly susceptible to contact and irritant dermatitis.¹⁰⁸⁻¹¹⁰ Numerous ingredients that are included in eyelash enhancers can cause eyelid dermatitis, including but not limited to preservatives,

TABLE 3

Representative List of Eyelash-Enhancing Products

Product	Manufacturer	Ingredient Categories
Beautylash MD eyelash conditioner	Nutraluxe	Hyaluronic acid, peptides, plant extracts, vitamins (A, B, C, and E)
Brow Boost	Billion Dollar Brows	Amino acids, B vitamins, glycosaminoglycans
Brow & Lash Growth Accelerator	Ardell	B vitamins, plant extracts, proteins
DermaLash Mascara	DermaQuest Skin Therapy	Amino acids, flavonoids, peptides, plant extracts, triterpenoids
Double Extend Concentrated Lash Boosting Serum	L'Oréal Paris	Amino acids, B vitamins, hyaluronic acid, plant extracts
Double Lash	Mavala	Amino acids, B vitamins, glycosaminoglycans
Enormous Lash	Beauty Society	Amino acids, plant-derived sphingolipids, triterpenoids, yeast extract (fermented with copper)
Eyelash Conditioner	MD Lash Factor	Amino acids, B vitamins, glycosaminoglycans, 7-[3,5-dihydroxy-2-(3-hydroxy-4-phenoxy-but-1-enyl)-cyclopentyl]-hept-5-enoic acid ethylamide
Eyelash Fortifier	B. Kamins Laboratories	Amino acids, B vitamins, plant extracts
Eyelash Lipocils	Talika Beauty, LLC	Plant extracts
Eyesentials and Lashes	Eyes & Faces	Amino acids, glycosaminoglycans, hyaluronic acid, peptides, plant extracts, prostaglandin analogue, vitamins (A, B, C, and E)
FNS Nutrilash Lash & Brow Enhancer	Osmotics Cosmeceuticals	Amino acids, antioxidants, plant extracts, vitamins (B and E)
Folligen Cream	Skin Biology	Amino acids, copper, plant extracts and oils, peptides, vitamins (D and E)
HydroPeptide Lash	HydroPeptide	B vitamins, hexapeptides, plant sugars
Idol Lash Eyelash Enhancer	Idol Lash	Glycosaminoglycans, peptides, plant extracts, vitamins (B and E)
LashActivator	Cargo Cosmetics	Biotin-peptide complex, flavonoids, plant extracts, seaweed extracts, triterpenoids, vitamins (E)
Lash + Brow Growth Stimulator	ModelCo	Peptides, plant extracts, vitamins (B, C, and E)

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(CONTINUED)

Product	Manufacturer	Ingredient Categories
Lashes to Die For: The Mascara	Peter Thomas Roth Labs, LLC	Glycosaminoglycans, hyaluronic acid, plant extracts, prostaglandin analogue, vitamins (A, B, C, and E)
Lashtique	Ardell	Flavonoids, peptides
Latisse	Allergan, Inc	Prostaglandin analogue
LiLash	Cosmetic Alchemy	B vitamins, flavonoids, plant extracts, peptides, possibly a prostaglandin analogue in older formulation
Magic Lash Growth Enhancer	Ardell	Flavonoids, glycoproteins, peptides, triterpenoids
Marini Lash Eyelash Conditioner	Jan Marini Skin Research, Inc	B vitamins, peptides, plant extracts
MaxoLash	Dermagevity Skin Care	B vitamins, glycoproteins, hyaluronic acid
multiplEYE	Tarte Cosmetics	Adenosine, peptides, soy protein, vitamins (C)
Natural Eyelash Conditioner	LashFood	B vitamins, flavonoids, peptides, numerous plant extracts
Neova Advanced Essential Lash eyelash conditioner	PhotoMedex, Inc	Amino acids, glycosaminoglycans, hyaluronic acid, peptides
neuLash Lash Enhancing Serum	Skin Research Laboratories	Glycosaminoglycans, hyaluronic acid, peptides, plant extracts, prostaglandin analogue
Nutraluxe Lash MD	Nutraluxe	Amino acids, glycosaminoglycans, peptides, plant extracts, prostaglandin analogue, vitamins (A, B, C, and E), yeast extract
RapidLash	International Research Laboratories	B vitamins, peptides, plant extracts, prostaglandin analogue
RefectoCil Longlash Gel	GW Cosmetics	Vitamins (B and E)
Renew Eyelash Revitalizer	Rozgé Cosmeceutical	B vitamins, flavonoids, glycosaminoglycans, peptides, plant extracts
RevitaLash	Athena Cosmetics Inc	B vitamins, peptides, plant extracts, prostaglandin analogue
SD Lash Advance Lash & Brow Gel	Winkx, LLC	B vitamins, glycosaminoglycans, hyaluronic acid, peptides, plant extracts
StarLash Eyelash Growth Enhancer	Elavont Corporation	Antioxidants, B vitamins, folic acid
StimulashFusion	Fusion Brands, Inc	Amino acids, glycosaminoglycans, peptides, prostaglandin analogue, vitamins (A, B, C, and E)

antioxidants, resins, emollients, and plant extracts.¹⁰⁸ Draelos¹⁰⁸ outlined a practical and methodical algorithm for treatment approaches in patients with suspected contact dermatitis of the upper eyelid.

CONCLUSION

Women seek long, lush, and attractive eyelashes, which can be achieved with over-the-counter or prescription products. Currently, the only pharmaceutical approved by the FDA for eyelash hypotrichosis is Latisse. Although generally regarded as safe, notable side effects exist. Numerous cosmeceutical eyelash enhancers also are on the market. The most common ingredient categories include plant extracts, vitamins, and peptides. Many of these products have not been tested for safety or efficacy, but most common ingredients generally are considered to be safe, as they are included in other cosmeceuticals or are orally consumed. However, some products may contain new ingredients without an established safety profile. Others contain prostaglandin analogues that have well-known side effects. Consumers should be educated regarding the potential risks and benefits of using these cosmeceuticals.

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