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A Compressive Review on Vitamin E is Use as Herbal Scrub Cream

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Abstract: *Vitamin E (α-tocopherol and derivatives) is commonly included in lip care formulations for its antioxidant and skin-conditioning properties. When used in herbal lip scrubs — typically oil + humectant + abrasive + botanical extracts — vitamin E can contribute antioxidant protection and help stabilize carrier oils. However, clinical evidence for improved scar or wound outcomes from topical vitamin E is mixed and topical use carries a low but real risk of allergic contact dermatitis in susceptible individuals. Proper formulation (concentration, form, processing temperature, choice of essential oils) and conservative usage instructions reduce risks and improve stability and efficacy*

Keywords: Tocopherolas, Lip care , Treatment, Formulation, Radicals , Phases, Landmarks, Composition, Mucous

I. INTRODUCTION

1. Background and chemistry:

Vitamin E refers to a family of tocopherols/tocotrienols; α-tocopherol (and the acetate ester, tocopheryl acetate) are widely used in cosmetics because they are lipid-soluble antioxidants that interrupt free-radical chain reactions in lipid phases. In anhydrous (oil) systems such as lip scrubs/balms, vitamin E is oil-soluble and commonly added to the oil phase to act both as a skin conditioning agent and to delay rancidity of carrier oils. Stability is formulation-dependent (temperature, light, and presence of other actives influence degradation).(1)

2. Anatomy of the Lips:

A. External Landmarks

Vermilion border: The sharp, visible margin between normal facial skin and the red portion of the lips.
Vermilion zone: The pink-red area of the lips; lacks hair follicles and sweat glands. Cupid's bow: Double curve on the upper lip formed by the philtral columns.
Philtrum: Vertical groove between the upper lip and nose.
Oral commissures: Corners of the mouth where upper and lower lips meet.

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B. Layers of the Lips:

The lips are composed of three main layers(2)

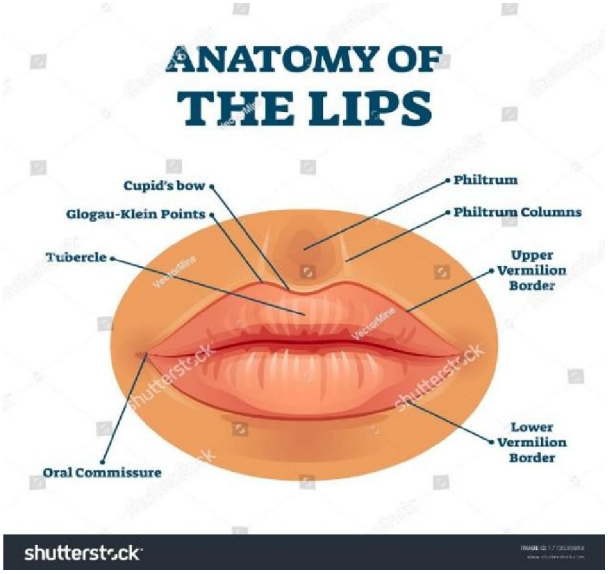

Fig No. 1 Anatomy pf the lips

1. Skin (Cutaneous Layer)

Thin keratinized stratified squamous epithelium.Contains sebaceous glands, but no sweat glands on the vermilion.

Few melanocytes → less pigment → more sun sensitivity.

2. VermilionTransitional tissue between facial skin and oral mucosa. Lightly keratinized or non-keratinized epithelium

Appears red due to:

Very thin epithelium

Rich capillary network close to the surfaceLacks: Sweat glands

Hair follicles Salivary glands

→ This is why lips dry out easily.

3. Oral Mucosa

Non-keratinized stratified squamous epithelium. Moist and lubricated by saliva.

C. Muscles of the Lips

Orbicularis Oris Muscle Primary muscle of the lips.

Encircles the mouth like a sphincter but functions as a complex, multi-directional muscle. Responsible for:

Pouting

Closing lips

Speech articulation Kissing

Other Contributing Muscles

Levator labii superioris → raises upper lip Depressor labii inferioris → lowers lower lip Zygomaticus major/minor → smiling

Risorius → retracts corners

Buccinator → helps with blowing, chewing(3)

D. Blood Supply

Lips have a rich vascular supply, giving them their characteristic red color. Arteries:

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Superior & inferior labial arteries, branches of the facial artery Veins:
Drain to the facial vein
This rich blood supply helps:
Faster healing
Enhanced drug absorption High sensitivity to injury
E. Nerve Supply
Lips are among the most sensitive regions of the body. Sensory (Touch, Pain, Temperature):
Upper lip: Infraorbital nerve (branch of CN V2 – maxillary) Lower lip: Mental nerve (branch of CN V3 – mandibular)
Motor:
Facial expressions controlled by facial nerve (CN VII) Taste:Very limited on lips (taste buds mostly inside the mouth).
F. Glands
Mucous (minor salivary) glands present inside the lip mucosa. No sweat glands on vermilion → leads to dryness.
Some sebaceous glands (Fordyce spots) on inner lips.(4)
3. Physiology of the Lips
A. Barrier FunctionLips have a weak skin barrier due to: Thin stratum corneum
Low lipid content
No sweat or sebaceous secretion on vermilion
→ Makes lips prone to dehydration, cracking, and sun damage.(5)
B. Moisture Regulation
Lips depend entirely on:Saliva
External moisturizers (lip balm, oils)
Lack of natural moisturization makes exfoliation and conditioning important.
C. Sensory Function
High density of mechanoreceptors and nociceptors → responsible for: Tactile sensitivity
Temperature sensation Pain perception
Important for feeding in infants and social communication.
D. Role in Speech
Lips help form many consonants: P, B, M, F, V, W
They modify airflow and resonance.
E. Role in Eating
Seal during swallowing Help grasp or hold food
Assist in suction and blowing

F. Immune & Healing Physiology
Rich vascularity → fast healing Mucosal immunity involving:
Langerhans cell

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Fig No. 2 Sources of vitamin e

Types of Vitamin E and Their Uses:

Vitamin E is a fat-soluble vitamin with several forms, but alpha-tocopherol is the only one used by the human body. Its main role is to act as an antioxidant, scavenging loose electrons—so-called "free radicals"—that can damage cells. It also enhances immune
function and prevents clots from forming in heart arteries. Antioxidant vitamins, including
vitamin E, came to public attention in the 1980s when scientists began to understand that free radical damage was involved in the early stages of artery-clogging atherosclerosis, and might also contribute to cancer, vision loss, and a host of other chronic conditions. Vitamin E has
the ability to protect cells from free radical damage as well as reduce the production of free radicals in certain situations. However, conflicting study results have dimmed some of the promise of using high dose vitamin E to prevent chronic diseases.(6)

Vitamin E is a fat-soluble antioxidant made up of 8 naturally occurring compounds belonging to two families:
1. Tocopherols (4 types)
2. Tocotrienols (4 types)
Both groups have α (alpha), β (beta), γ (gamma), and δ (delta) forms(7)
1. Types of Vitamin E

Fig No. 3 Vitamin E

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A. Tocopherols (Saturated side chain)

These are the most common in foods and supplements.

1. Alpha-Tocopherol (α-tocopherol)

Most biologically active form in the human body Main type used in supplements and skincare

Highest antioxidant activity

Preferred by the liver for transport in the blood

2. Beta-Tocopherol (β-tocopherol) Less abundant

Antioxidant properties

Works synergistically with other tocopherols

3. Gamma-Tocopherol (γ-tocopherol) Most common in the American diet Strong anti-inflammatory effects

Better at trapping reactive nitrogen species

4. Delta-Tocopherol (δ-tocopherol) Potent antioxidant

Shows strong anti-cancer potential in research studies(7)

B. Tocotrienols (Unsaturated side chain)

These have better penetration into tissues due to their structure.

1. Alpha-Tocotrienol Neuroprotective effects Strong antioxidant

2. Beta-Tocotrienol

Rare in nature

Supports cellular protection

3. Gamma-Tocotrienol Anti-inflammatory

Strong cancer-preventive properties (studied in labs)

4. Delta-Tocotrienol

Most potent antioxidant among tocotrienols

Studied for anti-cancer and cholesterol-lowering effects

2. Forms of Vitamin E in Products

In cosmetics and supplements, Vitamin E comes in additional forms(8)

1. d-Alpha-Tocopherol Natural form

Higher bioavailability

Used in high-quality supplements and skincare(10)

2. dl-Alpha-Tocopherol Synthetic form

Cheaper, less potent

Found in many commercial skin products

3. Tocopheryl Acetate

Most common cosmetic form More stable than pure tocopherol Less likely to oxidize

Widely used in lip balms, lip scrubs, lotions, serums

4. Tocopheryl Linoleate / Tocopheryl Nicotinate

Modified for enhanced absorption or specific skin benefits Often included in dermatological formulations

3. Uses of Vitamin E

A. Skin-Related Uses (Cosmetic/Dermatology)

Protects skin from oxidative stress (sun, pollution) Moisturizes and strengthens skin barrier

Used in:

Lip balms Lip scrubs Moisturizers

Anti-aging serums

Scar creams (though evidence is mixed)(9)

B. Hair Care Uses

Adds shine and reduces dryness

Prevents oxidative damage to scalp and hair Used in serums, oils, and conditioners

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C. Internal / Nutritional Uses

(Especially α-tocopherol) Acts as a systemic antioxidant Supports immune function
Protects cell membranes from free radicals Supports cardiovascular health
May help prevent LDL oxidation
Used to treat Vitamin E deficiency (rare)(10)

D. Medical / Therapeutic Uses

Supplementation in malabsorption syndromes Adjunct therapy in fatty liver disease (NAFLD) Neuromuscular disorders Premature babies at risk of oxidative stress Research on tocotrienols for:
Cancer therapy
Neuroprotection (stroke, brain injury)(11)

E. Industrial / Formulation Uses Acts as an antioxidant stabilizer in: Oils

Creams
Pharmaceuticals Food products(12)

2. Why lips — anatomy and functional need:

Lips have a very thin stratum corneum, lack sweat and sebaceous glands, and therefore have poor intrinsic moisturization and a high propensity to chapping and scale. This makes them particularly responsive to occlusives, emollients, humectants, and gentle exfoliation to
remove build-up of desiccated stratum corneum. Gentle, infrequent exfoliation followed by hydration/occlusion is the accepted approach. (13)

3. Mechanisms: how vitamin E may help in a lip scrub:

Antioxidant protection for oils and skin lipids: prevents oxidation of carrier oils and may
protect keratinocyte lipids from oxidative stress. Skin conditioning / emollient effects: lipid- soluble vitamin E can soften and condition the thin lip skin when included at appropriate levels. (14)
Formulation stabilizer:
small amounts of tocopherol also act as an anti-rancidity antioxidant for polyunsaturated carrier oils used in herbal scrubs (e.g., chia, flax, avocado oil).
Important caveat:
systematic/clinical evidence that topical vitamin E improves scarring or wound healing is inconsistent; some studies show no benefit and others show possible adverse cosmetic
outcomes — and contact allergy events are reported (rare but notable). Thus claims of “scar removal” or dramatic healing from vitamin E are not well supported. (15)

4. Typical herbal lip-scrub formulation components & role

Physical exfoliant (abrasive): fine sugar (preferred for lips), finely ground rice/oat/almond meal — removes flaky skin. Dermatologists advise gentle use once weekly to avoid micro- tears. Oils (carrier + botanicals): sweet almond, coconut, jojoba, avocado, or blends —
provide emollience and serve as vehicle for vitamin E. Unrefined oils may contain native tocopherols; added vitamin E stabilizes them. (16)
Humectant: glycerin or honey —
Draws/retains moisture after exfoliation. Glycerin is well described as an effective humectant in dermatologic literature. Occlusive/emulsifier (optional if leaving on): beeswax or small amount of butter (to make a balm after scrubbing); beeswax also forms a breathable barrier and is common in lip products. Botanical extracts / essential oils: calendula, rosehip,
chamomile, or small amounts of essential oils for fragrance. Beware phototoxic citrus oils (bergamot, cold-pressed lemon) and sensitizers. (17)
Vitamin E (α-tocopherol or tocopheryl acetate): used at low % as antioxidant/stabilizer (0.1– 1% for oil stabilization) and at modest levels (0.5–2% or per supplier guidance) when
intended as skin active — add in cool-down to avoid thermal degradation. (18)

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5. Evidence summary (topical vitamin E in dermatology & lip products):

Reviews show vitamin E is biologically plausible (antioxidant, anti-inflammatory), widely used in dermatology and cosmetics, but human studies on wound/scar improvement are mixed and complicated by formulation issues and reaction reports. Safety panels (eg.

Cosmetic Ingredient Review) and regulatory summaries indicate tocopherols are generally safe for topical cosmetic use but that product quality and stability vary; labeling and

concentration may differ from claim. Case reports and patch-test series document allergic contact dermatitis to vitamin E derivatives in a minority of users — the incidence is low but real; clinicians warn to consider ACD when topical products cause unexplained dermatitis. (19)

6. Risks & practical safety guidance (specific to lip scrubs):

Allergy/contact dermatitis: perform patch test (small area of inner arm) if prone to sensitivities; discontinue if rash appears. Avoid ingestion/inhalation of vitamin E acetate: topical use on lips is external — do not formulate for inhalation or internal use; vitamin E

acetate became notorious in vaping lung injury contexts and is not safe for inhalation. Do not use scrubs intended for lips as edible products.(20)

oils: avoid phototoxic citrus essential oils on areas exposed to sunlight; use very low concentrations or non-phototoxic alternatives on lips. (21)

Abrasiveness: avoid coarse abrasives (e.g., coarse salt, crushed shells) on lips; sugar is preferred and keep scrubbing very gentle and infrequent (≈ once weekly). (22)

Stability: add vitamin E during cool-down (<40°C) to limit thermal loss; consider tocopheryl acetate for higher thermal stability but remember conversion and activity differ.

7. Example gentle herbal lip-scrub recipe (bench / DIY; for cosmetic lab work adapt to GMP):

Sugar (fine) — 40 g

Sweet almond oil (or jojoba) — 30 g

Beeswax (melted small % if you want semi-solid finish) — 3–5 g (optional) Glycerin — 5 g

Vitamin E (α -tocopherol oil) — 0.5 – 1.0 g (≈0.5 – 1% final) — add at cool-down (<40° C). Dried calendula powder or finely milled oats — 5 g (soothing herbal)(23)

Optional: 1 drop vanilla extract or non-phototoxic essential oil (ensure low ppm)

Instructions: Mix oil + glycerin + vitamin E (cool phase) with sugar and herbal powders until uniform. Store in airtight jar, keep away from light/heat. Use gently once weekly; rinse and

follow with occlusive balm. (24)

8. Recommendations for formulators & clinicians:

Use validated supplier guidance for tocopherol/tocopheryl acetate concentrations. Typical antioxidant stabilizing use is 0.1–1%; skin-active concentrations often 0.5–2% depending on form. Add in cool-down to preserve activity. Test final product for tocopherol content and stability under storage conditions. (25)

Patch test new formulations; label for external use only; warn customers not to ingest and to avoid inhalation exposures. Document batches and perform basic microbial testing for

products that incorporate water or humectants (if water present). (26)

9. Conclusions

Vitamin E is a useful antioxidant and conditioning agent in herbal lip scrub formulations. It helps stabilize carrier oils and can condition the lip skin when used at appropriate

concentrations and with good formulation practice. Evidence for dramatic clinical benefits (eg. scar elimination) is limited; safety concerns center on contact allergy in a small subset

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and on ensuring products are not misused (ingested or inhaled). Conservative recipes, gentle exfoliation frequency, careful essential oil selection, and clear labeling are practical steps to maximize benefit and minimize risk. The lips are unique anatomical structures combining

delicate skin, rich blood supply, high sensitivity, and essential functional roles in expression, speech, and feeding. Their weak natural barrier and lack of self-moisturizing mechanisms make them highly vulnerable to environmental damage—explaining the need for external care such as balms, oils, and gentle exfoliation.

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