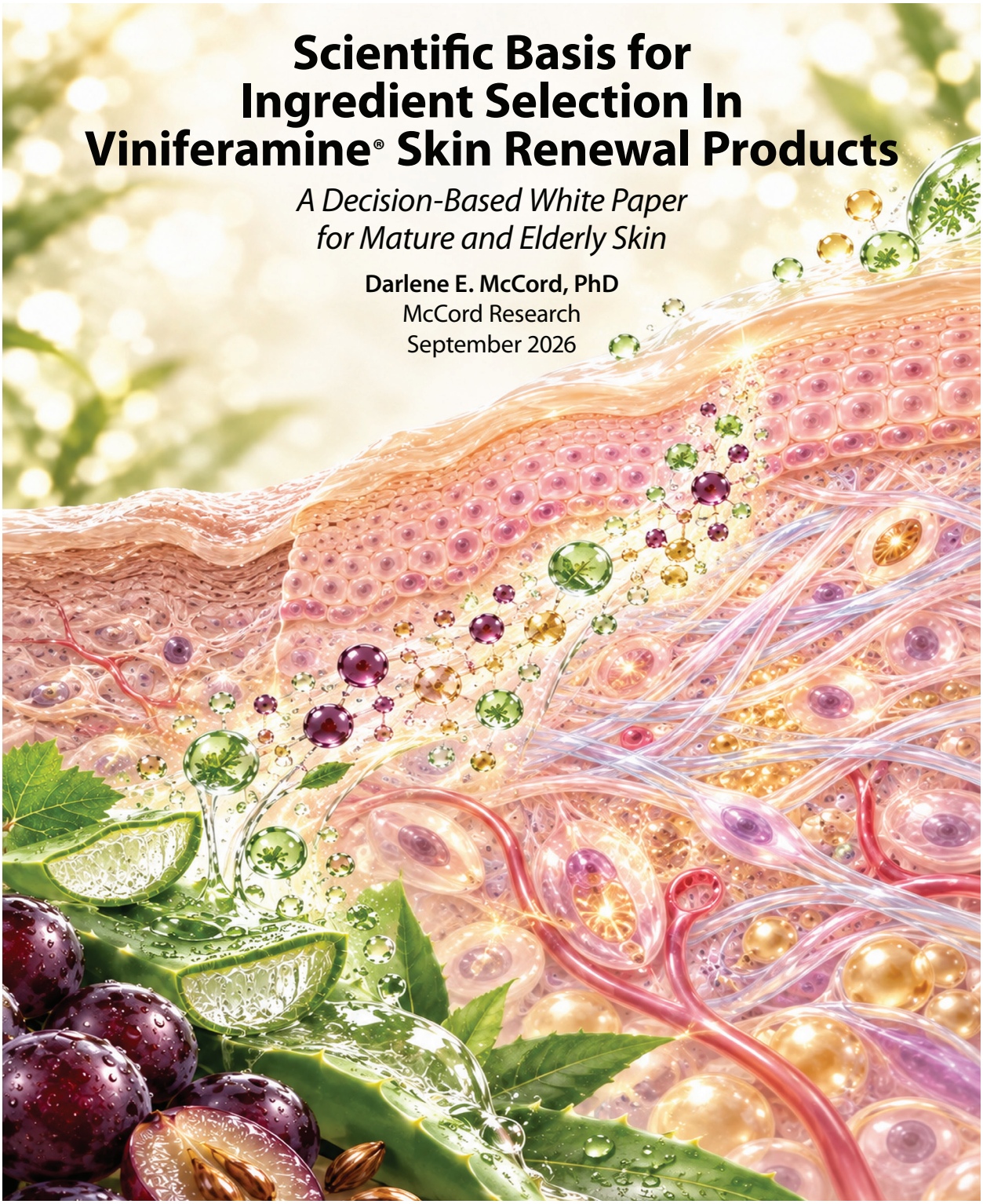
Scientific Basis for Ingredient Selection In Viniferamine® Skin Renewal Products

A Decision-Based White Paper for Mature and Elderly Skin

Darlene E. McCord, PhD
McCord Research
September 2026



Central Decision

The formulation is scientifically justified because it addresses several interdependent limitations of aging skin at the same time: insufficient water availability, diminished lipid support, oxidative burden, low-grade inflammatory signaling, altered surface acidity, and uneven delivery across fragile skin. Together, these functions create a credible opportunity for better results than a moisturizer designed only to leave a temporary occlusive film.

Executive Summary

Viniferamine® is best understood not as a collection of fashionable botanical ingredients, but as a deliberately assembled renewal environment for mature skin.

Elderly skin renews continuously, but under increasingly unfavorable conditions. Water availability declines, intercellular lipid organization becomes less efficient, recovery after disruption slows, surface pH often rises, antioxidant defenses are challenged, and senescent or stressed cells can sustain low-grade inflammatory signaling. A formulation intended for this population should therefore do more than soften the surface for a few hours. It should improve the physical and biochemical conditions under which keratinocytes differentiate, and the stratum corneum performs its barrier function.

The Viniferamine® ingredient strategy makes scientific sense because its components provide complementary forms of support. Aloe vera provides a hydrated, polysaccharide-rich matrix and may contribute to soothing and anti-inflammatory activity. Grapeseed oil and selected natural oils provide emollience and lipid substrates, particularly when the blend is rich in linoleic acid and protected from oxidation. Standardized grape seed extract contributes to polyphenolic antioxidant and anti-inflammatory potential. A stable vitamin C derivative offers antioxidant support and a biologically relevant cofactor for extracellular-matrix maintenance. A mildly acidic pH near 5.5 supports tolerability, ingredient compatibility, and the acid mantle's physiology.

The product family will use conventional topical dosage forms—creams, lotions, and pastes—selected based on the required coverage, emollience, protection, and residence time. These forms can carry the same renewal-supporting ingredient system while providing different physical behavior for broad daily application, gentle distribution over larger areas, or more persistent protection of localized dry and fragile skin.

The scientifically responsible conclusion is that this integrated formulation offers a credible opportunity for superior hydration, comfort, barrier quality, and visible skin condition compared with simpler products that address only one limitation. “Superior” remains a comparative performance proposition that must ultimately be demonstrated with the finished formulation; it is not established by ingredient literature alone.

1. Purpose of This Paper

This paper presents the scientific rationale for selecting and combining ingredients for Viniferamine® creams, lotions, and pastes intended for mature and elderly patients. It is a decision-based document, not a study proposal. Its purpose is to explain why the formulation architecture is coherent, why the ingredients are complementary, and why their combined nutrient-supporting and anti-inflammatory potential may produce results that exceed those of simple surface moisturization.

The word “nutrient” is used here in a local biochemical sense: water, lipids, fatty acids, antioxidant cofactors, minerals, and botanical constituents that help establish conditions compatible with normal epidermal function. It does not imply that a topical cosmetic product nourishes the body systemically or treats a nutritional deficiency. Likewise, anti-inflammatory potential refers

to the modulation of selected oxidative and inflammatory pathways described for the ingredients; it does not constitute a drug claim or a claim to treat dermatitis or other disease.

2. The Formulation Problem Presented by Elderly Skin

Aging skin is not simply young skin with less oil. It is a biologically altered tissue in which multiple protective systems simultaneously lose efficiency. Epidermal turnover and barrier recovery may slow. The stratum corneum holds less water and becomes more susceptible to xerosis, scaling, fissuring, pruritus, and irritation: lipid synthesis and lamellar organization change. Skin-surface pH frequently becomes less acidic, affecting enzymes involved in lipid processing, corneocyte cohesion, desquamation, and microbial ecology. Cumulative ultraviolet exposure, metabolism, pollution, and inflammation add oxidative stress, while intrinsic antioxidant capacity may decline. Cellular senescence can further influence the tissue through the persistent release of inflammatory mediators.[3,4,14]

These changes interact. Poor hydration reduces corneocyte flexibility and can impair enzyme-dependent processes. A weakened lipid barrier increases water loss and permits greater exposure to irritants. Oxidative stress can amplify inflammatory signaling, while inflammation can impair differentiation and barrier recovery. The formulation decision must therefore address the system, not merely one symptom.

Age-related Limitation	Formulation Response	Expected Practical Relevance
Reduced water content and xerosis	Aloe-based aqueous phase plus moisture-retaining cream, lotion, or paste structure	Improved suppleness, comfort, enzyme function, and orderly desquamation
Altered or insufficient barrier lipids	Grapeseed oil and selected oxidation-controlled oils	Reduced evaporative loss and support for intercellular lipid organization
Oxidative burden	Grape polyphenols plus a stable vitamin C derivative	Broader antioxidant protection through chemically distinct systems
Low-grade inflammatory signaling	Soothing aloe constituents and grape polyphenols; reduction of dryness-related stress	Opportunity to reduce the cycle of dryness, irritation, and inflammatory stress
Less-acidic surface environment	Finished-product pH near 5.5	Mildly acidic support for barrier physiology with frequent-use tolerability
Different body sites and degrees of dryness	Cream, lotion, or paste selected for the application need	Appropriate balance of coverage, emollience, protection, and residence

3. The Renewal-Environment Decision

The central formulation decision is to create an environment that consistently supports newly differentiating epidermal cells, rather than relying solely on a transient cosmetic film. Each application supplies water, emollient lipids, antioxidants, and a mildly acidic environment. Repetition matters because the epidermis is continually producing new cohorts of keratinocytes. When dryness and external stress are reduced over successive renewal cycles, the resulting stratum corneum may become better hydrated, more cohesive, more flexible, and more resilient.

This reasoning does not require a claim of cellular reprogramming. Research showing inflammatory memory in epidermal stem cells establishes that long-lived epithelial cells can retain molecular consequences of prior exposures.[1,2] However, Viniferamine® does not need to create an epigenetic memory to be scientifically valuable. Its near-term rationale is more direct: improve the local conditions under which epidermal differentiation, lipid processing, and barrier maintenance already occur. Any durable adaptation would be an additional mechanistic question, not the basis of the present ingredient decision. By potentially improving epidermal stem cell activity, Viniferamine® may promote the production of healthier keratinocytes that transition to the skin surface over approximately 27 days, thereby restoring the stratum corneum to a better functioning skin barrier while improving appearance.

4. Ingredient-by-Ingredient Scientific Rationale

4.1 Aloe vera: hydrated delivery matrix and soothing support

Aloe vera is scientifically useful first as a water-rich, polysaccharide-containing botanical matrix. Its polysaccharides can contribute humectant-like behavior, film formation, slip, and a soothing sensory profile. In elderly skin, these are not trivial cosmetic effects. Adequate hydration increases corneocyte flexibility, supports desquamatory enzyme activity, reduces the mechanical stress associated with scaling and microfissuring, and improves comfort.

Aloe also contains a complex mixture of minerals, sugars, organic acids, amino acids, sterols, and phenolic constituents, although the amounts depend greatly on species, cultivation, filleting, decolorization, purification, and storage. This composition supports aloe's role as a biologically compatible botanical matrix, but the formulation should not depend on aloe as a quantitatively complete mineral supplement. Its strongest decision basis is the combination of hydration, delivery, soothing potential, and reported modulation of selected inflammatory and repair-associated pathways.

Quality control is essential. Decolorized inner-leaf material, defined solids, microbial specifications, and limits for anthraquinones and processing variability are important for an elderly population whose skin may be less tolerant of irritants.

4.2 Grapeseed oil and selected natural oils: lipid availability and barrier support

Grapeseed oil should be distinguished from grape-seed extract. The oil supplies triglycerides and fatty acids rather than concentrated polyphenols. It is commonly rich in linoleic acid, an essential fatty acid relevant to epidermal lipid biology. Linoleic acid-rich oils are attractive for dry, barrier-impaired skin because they can provide emollience without the concerns associated with repeated exposure to highly oleic materials, which may disrupt barrier organization under some conditions.[7,8]

The oil phase also reduces friction, improves flexibility, fills microscopic surface irregularities, and lowers evaporative water loss. These effects help create the physical conditions required for renewal. The scientific decision is not simply to "add natural oils" but to select an oil blend based on fatty acid profile, concentration, oxidation stability, and compatibility with the complete emulsion.

Peroxide value, odor, color, packaging, oxygen exposure, and shelf-life stability are central to this rationale. An oxidized oil would introduce reactive products into a formulation intended to reduce oxidative burden. The oil blend should therefore be treated as a controlled lipid system rather than an unqualified botanical feature.

4.3 Standardized grape-seed extract: polyphenolic antioxidant and anti-inflammatory potential

Grape-seed extract supplies polyphenols, especially proanthocyanidins, that are chemically and functionally different from the fatty acids in grapeseed oil. These polyphenols can scavenge reactive species, interact with redox-sensitive signaling, and modulate selected inflammatory pathways in preclinical systems. Published work also supports repair-associated activity, including keratinocyte-related signaling and wound-healing observations. However, wound-healing findings should not be applied directly to cosmetic claims for intact elderly skin.[12,13]

The decision to include grape-seed extract is particularly strong because oxidative stress and inflammation reinforce each other. Reducing oxidative triggers may reduce downstream inflammatory signaling; reducing irritation and inflammatory stress may, in turn, allow more orderly differentiation and barrier recovery. This offers a mechanistic bridge between antioxidant chemistry and the visible goals of a renewal product: less roughness, greater comfort, improved tone, and a more resilient appearance.

A standardized extract is essential. Total polyphenols, proanthocyanidin distribution, extraction solvent, residual solvents, microbial quality, color, odor, and stability should be specified. The botanical name alone does not ensure consistent biological potential.

4.4 Stable vitamin C: antioxidant cofactor and matrix-support rationale

Vitamin C is relevant to both epidermal and dermal biology. It participates in antioxidant defense, influences keratinocyte differentiation and signaling, and is required for enzymatic hydroxylation steps in collagen maturation.[9–11] For elderly skin, that combination makes vitamin C a rational component of a renewal strategy rather than merely a brightening ingredient.

Native L-ascorbic acid is difficult to stabilize and commonly requires a substantially lower pH for efficient passive delivery. A stable derivative can be better suited to a cream, lotion, or paste near pH 5.5, but “stable vitamin C” is not a single scientific category. The exact derivative determines solubility, conversion to active ascorbate, penetration, effective concentration, and compatibility with the botanical system. The decision basis, therefore, includes identification of the derivative and verification that meaningful potency remains through shelf life.

Vitamin C and grape polyphenols provide complementary rather than redundant antioxidant support. Their combination may broaden protection across aqueous and interfacial microenvironments and may reduce dependence on a single antioxidant mechanism. Compatibility testing remains important because antioxidants can also interact chemically with one another and with oxygen, light, trace metals, preservatives, and packaging.

4.5 Mildly acidic pH near 5.5: physiologic compatibility and formulation balance

A finished-product pH near 5.5 is a reasoned compromise among acid-mantle support, ingredient stability, preservation, and tolerability. It avoids the alkaline conditions known to disturb barrier physiology and is compatible with frequent use on fragile-feeling skin. A mildly acidic environment may support lipid-processing enzymes, corneocyte cohesion, desquamation, and microbial balance.

Some controlled work in elderly subjects has found stronger barrier effects from an emulsion near pH 4 than from one near pH 5.8.[5] That evidence does not invalidate the pH 5.5 decision because vehicle, buffering capacity, actives, and tolerability all influence the outcome. It does show that "physiologic pH" is not a slogan. The finished formulation's buffering behavior, stability, and effect on actual skin-surface pH are more meaningful than the nominal value alone.

5. Why the Ingredients Make More Sense Together

The opportunity for superior performance arises from functional integration. Each ingredient addresses a different limiting factor, and the benefit of one component can improve the conditions in which another performs.

Formulation Action	Primary Contributor	How It Supports the Other Actions
Hydrates and softens	Aloe-rich aqueous phase	Improves spread, corneocyte flexibility and, access of dissolved constituents to the surface
Replenishes and retains lipids	Grapeseed and selected oils	Reduces water loss, helping preserve the hydrated environment established by the aqueous phase
Limits oxidative stress	Grape polyphenols and stable vitamin C	Protects lipids and cellular structures from oxidative burden and may reduce redox-driven inflammatory signaling
Calms stress signaling	Aloe and grape polyphenols, supported by barrier repair	Interrupts the cycle in which dryness and irritation promote inflammation that delays recovery
Supports renewal conditions	pH near 5.5 plus repeated application	Provides a consistent environment compatible with epidermal enzyme activity and differentiation
Distributes the system	Cream, lotion, or paste vehicle selected for the site and need	Balances broad coverage, gentle spreading, emollience, protection, and residence

This is a systems formulation. Water without lipid protection evaporates. Oils without water may soften, but do not fully correct dehydration. Antioxidants without uniform delivery may leave portions of the surface underexposed. Anti-inflammatory potential is less meaningful if the vehicle itself is irritating or oxidized. The complete product must therefore preserve all of these functions simultaneously.

6. Dosage-Form Rationale: Creams, Lotions, and Pastes

Creams, lotions, and pastes are appropriate vehicles for the Viniferamine® ingredient system, provided that each formula maintains stability, preserves antioxidant potency, spreads without

excessive friction, and leaves the intended degree of moisture retention and protection on elderly skin.

Creams provide a balanced combination of aqueous and oil phases. They are well-suited to routine application because they can deliver aloe-derived hydration and water-soluble constituents while simultaneously depositing grapeseed oil and other emollient lipids. A properly designed cream can provide meaningful residence without feeling excessively heavy, making it appropriate for broad daily renewal and maintenance.

Lotions use a lower-viscosity structure that supports rapid, gentle distribution over larger or hair-bearing areas. This can be important for elderly patients because extensive rubbing may aggravate fragile skin. A lotion may sacrifice some occlusion and residence compared with a richer cream or paste, but it can improve ease of application, coverage, and adherence to regular use. Those practical advantages can materially affect the amount and consistency of ingredient delivery.

Pastes provide greater body, localized residence, and physical protection. They are appropriate for very dry, friction-exposed, or vulnerable areas that require a more persistent layer and stronger reduction in evaporative water loss. Their higher viscosity can help keep the ingredient system where it is applied, although spreadability, removal, residue, and the risk of excessive occlusion must be balanced for elderly skin.

The three forms, therefore, serve complementary purposes within one scientific platform. The lotion favors broad and gentle coverage; the cream balances hydration, emollience, and daily acceptability; and the paste favors persistence and localized protection. The active rationale remains consistent across the family, while rheology and phase structure allow each product to answer a different patient-care need.

Dosage Form	Primary Physical Advantage	Most Relevant Use within the Renewal Strategy
Lotion	Low viscosity and gentle distribution	Broad areas, hair-bearing skin, and situations in which minimal rubbing and rapid coverage are priorities
Cream	Balanced aqueous and lipid delivery with moderate residence	Routine daily renewal, hydration, emollience, and sustained comfort
Paste	High viscosity, localized persistence, and stronger protective character	Very dry or friction-exposed areas requiring longer residence and reduced evaporative loss

7. Scientific Basis for the Opportunity to Provide Superior Results

The formulation has a credible opportunity to outperform a simple occlusive moisturizer because it is designed to address both immediate skin feel and the biological environment of continued renewal. Immediate results may include softness, lubrication, reduced tightness, and improved appearance. Cumulative results may arise as better hydration, reduced evaporative loss, lower irritation burden, antioxidant support, and improved lipid conditions are repeated across successive epidermal turnover cycles.

The most defensible comparative proposition is not that each ingredient independently "reverses aging." It is that a coordinated formulation may achieve broader and more durable

improvement because it removes several constraints at once. In mature skin, where multiple deficits coexist, the breadth of support is itself a rational basis for differentiation.

Decision Statement	Scientific Strength	Appropriate Interpretation
Ingredients are complementary rather than duplicative	Strong formulation rationale	They address hydration, lipid support, oxidative burden, inflammatory potential, acidity, and delivery through different mechanisms
Repeated use may improve the environment of epidermal renewal	Biologically credible	Improved conditions may benefit successive cohorts of differentiating keratinocytes without implying reprogramming
Finished product has an opportunity for superior results	Reasoned comparative hypothesis	Superiority must be shown against a defined comparator using the finished formula
Formulation provides anti-inflammatory potential	Ingredient-supported potential	Supports soothing and stress-reduction rationale; it is not a claim to treat inflammatory disease
Formulation improves nutrient supply	Defensible when carefully defined	Improves local availability of water, lipids, antioxidant cofactors, and botanical constituents; it does not correct systemic deficiency

8. Formulation Decisions Required to Preserve the Scientific Rationale

The intended biology can be lost due to poor raw material control or an unstable vehicle. The following decisions are therefore part of the scientific concept, not merely manufacturing details:

- Specify the exact stable vitamin C derivative, its conc entration, assay method, conversion rationale, and retained potency through shelf life.
- Standardize grape-seed extract for relevant polyphenols and proanthocyanidins, not botanical identity alone.
- Characterize the fatty-acid profile of grapeseed oil and the complete oil blend, with particular attention to the linoleic-to-oleic balance.
- Control oxidation through raw-material specifications, peroxide-value monitoring, oxygen- and light-conscious packaging, and real-time stability testing.
- Define aloe source, processing, solids, decolorization, anthraquinone limits, microbial quality, and batch consistency.
- Verify the finished-product pH and buffering capacity throughout shelf life, rather than relying solely on the initial manufacturing value.
- Confirm that botanical materials and antioxidants remain compatible with the preservation system and package.
- Design rheology and sensory properties for low-friction, even application, and continued patient use.
- Evaluate cumulative irritation and sensitization with mature, fragile skin needs in mind.

9. Evidence Boundaries and Responsible Language

Ingredient literature establishes biological plausibility; it does not establish the performance of the finished Viniferamine® formulation. The paper therefore supports formulation decisions and a scientifically grounded product narrative, while preserving a clear boundary between rationale and proof.

Appropriate language includes “designed to support the renewal environment of mature skin,” “helps replenish moisture and botanical lipids,” “provides antioxidant and soothing support,” and “helps improve the softness, comfort, hydration, and appearance of dry skin.” Before comparative product testing, “offers an opportunity for superior results” is more accurate than “delivers superior results.”

10. Conclusion

The Viniferamine® skin renewal product family is scientifically coherent because it is designed around the actual complexity of elderly skin. Aloe vera supports hydration, delivery, and soothing. Grapeseed oil and selected natural oils provide controlled emollient and lipid support. Standardized grape seed extract contributes to polyphenolic antioxidant and anti-inflammatory potential. A stable vitamin C derivative adds antioxidant, differentiation, and extracellular-matrix relevance. A mildly acidic pH near 5.5 supports a physiologically compatible environment, while creams, lotions, and pastes provide dosage-form choices appropriate to different body sites and degrees of dryness or fragility.

Together, the ingredients create more than a temporary coating. They provide a repeated supply of water, lipids, antioxidant cofactors, and botanical constituents while reducing conditions that can perpetuate dryness and inflammatory stress. This integrated support provides a sound scientific basis for expecting meaningful skin renewal benefits and a credible opportunity for performance superior to that of a formulation limited to simple occlusion or surface softening.

The ultimate evidence will come from the finished product, because stability, concentration, compatibility, rheology, packaging, and patient adherence determine whether ingredient potential becomes product performance. Even before that comparative evidence is obtained, however, the ingredient decisions themselves are well aligned with the known biological needs of mature and elderly skin.

References

1. Naik S, et al. Inflammatory memory sensitizes skin epithelial stem cells to tissue damage. Nature. 2017;550:475–480. doi:10.1038/nature24271.
2. Larsen SB, et al. Establishment, maintenance, and recall of inflammatory memory. Cell Stem Cell. 2021;28:1758–1774.e8.
3. Rinnerthaler M, et al. Skin aging, gene expression and calcium. Experimental Gerontology. 2015;68:59–65.
4. Wang Z, Man MQ, Li T, Elias PM, Mauro TM. Aging-associated alterations in epidermal function and their clinical significance. Aging. 2020;12:5551–5565.
5. Kilic A, et al. Skin acidification with a water-in-oil emulsion (pH 4) restores disrupted epidermal barrier and improves lipid lamellae in the elderly. Journal of Dermatology. 2019;46:457–465.
6. Choi EH. Importance of stratum corneum acidification to restore skin barrier function in eczematous diseases. Annals of Dermatology. 2023.
7. Vaughn AR, Clark AK, Sivamani RK, Shi VY. Natural oils for skin-barrier repair: ancient compounds now backed by modern science. American Journal of Clinical Dermatology. 2018;19:103–117.
8. Poljšak N, Kočevar Glavač N. Vegetable butters and oils as therapeutically and cosmetically active ingredients for dermal use: a review of clinical studies. Frontiers in Pharmacology. 2022;13:868461.
9. Pullar JM, Carr AC, Vissers MCM. The roles of vitamin C in skin health. Nutrients. 2017;9:866.
10. Enescu CD, et al. A review of topical vitamin C derivatives and their efficacy. Journal of Cosmetic Dermatology. 2022;21:2349–2359.
11. Boo YC. Ascorbic acid is a cosmeceutical to increase dermal collagen for skin antiaging purposes. Antioxidants. 2022;11:1663.
12. Hemmati AA, et al. The topical effect of grape seed extract 2% cream on surgery wound healing. Global Journal of Health Science. 2014;7:52–58.
13. Khanna S, et al. Dermal wound healing properties of redox-active grape seed proanthocyanidins. Free Radical Biology and Medicine. 2002;33:1089–1096.
14. Baker P, et al. Skin barrier function: the interplay of physical, chemical, and immunologic properties. Cells. 2023.

Scientific and regulatory note. This document explains the scientific basis for formulation decisions. It does not establish clinical superiority, diagnose or treat disease, or substitute for safety, stability, compatibility, and finished-product performance testing appropriate to the intended use and market.