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AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment (Biotex Life Solutions): A Comprehensive Product-Focused Narrative Review of Sweet Almond Oil, Skin-Barrier Science, Cosmetic Formulation Rationale, Safety, and Translational Evidence

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Abstract: AC.NET Ayurvedic Almond Oil Cream is a dermatocosmetic cream from Biotex Life Solutions built around topical sweet almond oil (*Prunus dulcis*). As cosmetic and nutraceutical sectors converge, positioned wellness products require scientific substantiation to meet regulatory and publication standards. This product-focused narrative review assesses whether the published evidence on sweet almond oil supports the healthy-skin-nourishment positioning of AC.NET, and defines claim scope, validation priorities and claim language. Evidence was drawn from Cosmetic Ingredient Review (CIR) safety assessments, dermatological and clinical studies, plant-oil reviews, and mechanistic, analytical and formulation studies. Sweet almond oil is a triglyceride-rich fixed oil containing oleic (62–79%) and linoleic (20–30%) acids, with a lipid profile similar to stratum corneum lipids and sebum, supporting emollient, moisturising and barrier-supportive roles in a cream. Evidence relevant to pruritus, comfort and acne-prone skin, together with safety, tolerability, allergy and quality-control considerations, is summarised. The evidence supports positioning AC.NET as an emollient, moisturising, barrier-supportive cream that improves skin softness and comfort, but not as a treatment for any dermatological disease; claims are tiered by evidence strength and disease claims avoided. Product-monograph elements and a clinical evaluation pathway are proposed.

Keywords: sweet almond oil; *Prunus dulcis*; skin barrier; emollient; dermatocosmetic

Product Highlights

Sweet almond oil (*Prunus Amygdalus Dulcis* Seed Oil) is an approved cosmetic ingredient with proven emollient, moisturising, and skin-conditioning effects

Clinical evidence supports its performance as a barrier-comfort ingredient for xerosis, neonatal skin, and hand dermatitis

AC.NET should be positioned as a nutraceutical-cosmetic cream for healthy skin nourishment rather than as an anti-acne pharmaceutical formulation

Non-comedogenicity trials, patch testing, and formulation stability should be prioritised for publication-ready claims

The Ayurvedic branding of the formulation should be leveraged to highlight the ancient botanical practice of oil-based skin nourishment, not claim treatment of diseases

1. Introduction

1.1 Skin health and the demand for evidence-based topical wellness products

Intact skin barrier function, moisture balance, reduced exposure to irritants, and the use of tolerable skin-care treatments are integral to skin health ^[11, 13, 25]. The skin barrier is formed by corneocytes linked by desmosomes and surrounded by a lipid envelope consisting of ceramides, cholesterol, and free fatty acids ^[11]. The skin barrier protects the body from the environment, dehydration, pathogens, and physical injury. Impaired skin barrier function often manifests in dry, itchy, and rough skin, as well as xerosis and dermatitis ^[8,25,31]. Topical lipid treatment is a well-established approach to manage dry skin by restoring the physiological lipid film and improving skin comfort, elasticity, appearance, and moisture levels without targeting a specific pathology ^[7,11].

Topical plant oils and triglycerides have attracted scientific attention due to their fatty acid composition, skin conditioning effects, and compatibility with skin lipid layers ^[11, 13, 25]. Almond oil is one of the most common botanical lipids used in dermatocosmetics ^[1,4,12]. It is obtained from *Prunus dulcis* (Mill.) D.A. Webb, whose plant part and botanical nomenclature have changed several times in the last century. The species was previously known as *Amygdalus communis* L. and *Prunus amygdalus* Batsch, while the variety is either *P.dulcis* var. *dulcis* or *P.dulcis* var. *amara* ^[3, 12]. The almond oil from sweet almonds, i.e., *P.dulcis* var. *dulcis*, is widely used in cosmetics, whereas bitter almond oil is not fit for topical use due to the presence of amygdalin glycoside ^[1, 3, 12].

1.2 AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment

AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment is a topical dermatocosmetic cream introduced by Biotex Life Solutions with an emphasis on almond oil as the key ingredient. The product's name incorporates two marketing hints: the first is AC.NET's potential indication for acne-prone skin, while the second is the Ayurvedic reference to traditional skin treatment practices ^[19,44]. The oil extracted from almonds is called badam oil in South Asia and is used for body, facial, and hair moisturising; massage; and topical nourishment ^[18,19,44]. Badam oil is a traditional remedy for cracked skin and has been used in Ayurvedic medicine for centuries. Thus, AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment is likely to draw its brand value from the Ayurvedic connection to botanical skin treatment. However, the current review aims to assess if the evidence on almond oil sustains the publication-grade claims of a "healthy skin nourishment cream" and identify the language and validation priorities for the publication.

1.3 Scope and relevance

The collected evidence demonstrates that almond oil has been used extensively as an emollient, massage medium, cream oil, and cosmetic ingredient for skin moisturising and softening ^[1, 4, 20, 21, 25]. Cosmetic Ingredient Review (CIR) reports, dermatology literature, and clinical studies confirm the safety and efficacy of almond oil skincare treatments, particularly those targeting xerosis, pruritus, uremic itching, neonatal skin, hand dermatitis, donor-site care, and the prevention of striae gravidarum and pressure ulcers ^[8,11,13,24,25,30, 31]. Recent formulation studies highlight the ingredient's use in cold creams, moisturisers, sunscreens, eye treatments, lip balm, herbal acne treatments, and botanical skincare preparations ^{5, 16, 26-29, 32, 34-36, 39-65}.

However, a product-grade assessment of almond oil requires defining its evidence scope for the intended use. The ingredient has not been established as an effective standalone treatment for acne vulgaris ^{16,20,29,34-36,53,54,60}. In addition, no clinical studies are isolating the effects of almond oil in acne treatment formulations or proving its ability to reduce comedone formation, lower sebum production, or kill *Cutibacterium acnes* bacteria ^{16,29,34-36,53,54,60}. Therefore, AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment should be positioned as a skin nourishment cream that supports barrier comfort, improves the dryness-associated feel, and is suitable for acne-prone skin rather than a drug for treating acne vulgaris.

1.4 Publication purpose

This review focuses on the evidence and scope of claims for AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment. It compiles the botanical ingredient validation, clinical performance, formulation considerations, safety appraisal, and publish-ready language for developing the manuscript. As a product-focused article, it specifically examines the ingredient's relevance to the brand to support the intended use and compliance with the publication guidelines.

2. Methodology and review scope

This manuscript was developed as a product-focused narrative review using 5 packs of research reports on almond oil's safety, clinical performance, and formulation considerations. The reports were organised into evidence categories for publication-grade appraisal. The packs comprised the exact publicly available research reports, download records, CIR safety reviews, dermatology assessments, clinical studies, ingredient analyses, plant oil overviews, and recent botanical formulation studies. The following search terms were used: sweet almond oil, almond oil, badam oil, *Prunus amygdalus dulcis*, *Prunus dulcis*, *Prunus Amygdalus Dulcis* Seed Oil, *Amygdalus communis*. The following skin-related topics were explored: moisturization, emolliency, skin barrier support, xerosis, pruritus, dermatitis comfort, prevention of striae, neonatal skin, donor-site care, pressure ulcer prevention, anti-acne formulation use, tolerability, and product safety.

The evidence was categorised according to the depth of research: CIR safety appraisal, clinical studies, dermatology literature, and analytical reviews outweigh formulation studies^[1,4,8,11,13,22,24,25,30,31]. The latter were included due to the practical relevance of formulation considerations for a topical cream product, yet they were published as separate formulation-focused manuscripts^{5,16,20,21,26-29,32,34-36,39-65}. This is a critical distinction for a branded product review: a comprehensive formulation study may yield different results for a cream than the isolated addition of almond oil.

The publication-grade language and claim validity were assessed using the following categories: acceptable (skin conditioning, emolliency, moisturising effects), cautious (dermatitis management, photoaging relevance, acne-prone skin, neonatal skin, xerosis), and unsupported (treatment of acne vulgaris, removal of acne bacteria, reduction of sebum production, improvement of scars, cure of dermatitis, replacement of dermatological treatment). Therefore, AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment is a skin nourishment product with acceptable claims regarding skin conditioning, improved skin softness, and reduced dry skin-associated discomfort.

3. Product identity and publication positioning

3.1 Definition and framing

AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment is a topical dermatocosmetic concept developed by Biotex Life Solutions that uses almond oil as the key ingredient. For publication, the product should be positioned as a topical cream that nourishes the skin and improves the softness, moisture feel, comfort, and appearance of the skin. The language of nourishment refers to the enhancement of the skin's surface properties in dry skin conditions or after cleansing rather than correcting the nutritional status or providing pharmacological intervention of the skin's physiological functions.

3.2 Positioning AC.NET for acne-prone skin

The positioning of AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment for acne-prone skin requires additional validation. While the product's name does not specify this indication, the use of "AC.NET" suggests that the formulation is suitable for the skin condition accompanying acne vulgaris. Acne-prone skin is often associated with dryness and barrier impairment due to the frequent cleansing required for comedone removal, mechanical trauma from topical treatments, xerosis, and exposure to external irritants. Therefore, an emollient cream that improves the hydration and comfort of the skin without adding oiliness or comedogenic potential may be beneficial for acne-prone skin.

However, a brand review for a publication requires a transparent evaluation of the evidence. The current manuscript only covers the evidence for almond oil, whereas a clinical study would be required to isolate the effects of AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment and determine its performance in acne-prone skin. A cautious formulation claim would state that the formulation is fit for acne-prone skin with a recommendation to perform additional trials.

4. Botanical identity, nomenclature, and Ayurvedic context

4.1 Botanical overview and nomenclature

Almond oil is obtained by cold pressing or solvent extraction of almonds, the edible kernels of *Prunus dulcis* (Mill.) D.A. Webb. *P.dulcis* belongs to the Rosaceae family and is native to the Fertile Crescent and Persia. The species has also been known as *Amygdalus communis* L. and *Prunus amygdalus* Batsch, while the variety includes *dulcis* (sweet almonds) and *amara* (bitter almonds). Sweet almond oil is used in cosmetics, whereas bitter almond oil contains toxic glycoside amygdalin and is unsuitable for topical application^[1, 3, 12].

Almond oil is a triglyceride of oleic, linoleic, palmitic, and stearic acids with a pale yellow colour and slight nutty odour. It has been used in dermatology and cosmetics for its emollient and moisturising effects and is compatible with the skin's natural lipid composition ^[1,4]. The oil's lipid content was characterised in multiple reports for different almond varieties ^[3,12]. Its physiological relevance is explained by the similarity of the fatty acid profile to human sebum and the stratum corneum's lipid composition.

4.2 Ayurvedic context and formulation claims

Ayurvedic medicine uses badam oil (or almond oil) in topical treatments for cracked skin, infant massage, and nourishing facial and body skin care. This is congruent with the modern dermatology literature on skin barrier function and the need for regular moisturising and protection from irritants ^[11,25]. Ayurvedic formulations are popular in South Asian countries, where the use of botanical oils in skincare has been a tradition for centuries. Therefore, the Ayurvedic branding of AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment is appropriate, provided that the claims follow the evidence on the oil's effects.

In other words, the Ayurvedic connection should be framed in the idea of skin nourishment with almond oil rather than suggesting that the product is an alternative or complementary medicine. In the context of acne, Ayurvedic skin treatments mostly focus on dry skin and hair, whereas oil-based acne treatments require individual evaluation for comedogenic potential and compatibility with the treatment regimen. In addition to the Ayurvedic practice of skin nourishment and protection, the formulation would benefit from clinical validation of tolerability and barrier support for acne-prone skin.

5. Chemical and functional rationale of sweet almond oil

5.1 Lipid rationale

The physiological rationale for using sweet almond oil in skincare and dermatology is based on the oil's fatty acid composition. Published reports confirm that sweet almond oil is a mixture of glycerol esters of oleic (C18:1, ω -9), linoleic (C18:2, ω -6), palmitic (C16:0), and stearic (C18:0) acids, with oleic and linoleic acids accounting for 62–79% and 20–30%, respectively ^[3,12]. Other components include vitamin E (α -tocopherol), phytosterols, palmitoleic (C16:1, ω -7), and gondoic (C20:1, ω -9) acids ^[8, 11].

The high oleic acid content supports the oil's emollient effects, with increased oleic acid levels positively correlating with the degree of skin penetration ^[17]. In addition, linoleic acid is an essential fatty acid that plays a role in maintaining skin barrier integrity ^[11,13]. Together, oleic and linoleic acids make up the majority of fatty acids in human sebum and stratum corneum lipids, contributing to the oil's compatibility with the skin's lipid layer. Moreover, studies suggest that linoleic acid deficiency is associated with impaired epidermal barrier function and inflammatory response ^[11, 13].

5.2 Formulation roles in a cream system

As a cream ingredient, sweet almond oil can play several roles, including an oil-phase component, an emollient, an emulsifier, and a skin-conditioning agent. Sweet almond oil can improve the formulation's consistency, spread ability, adherence to the skin, and moisturising effects ^[3, 7, 11, 23, 40]. Its lipid content can also help replenish the stratum corneum lipids ^[7,11,23,40]. The skin-conditioning effects of sweet almond oil have been demonstrated in numerous clinical studies, including assessments of skin dryness, dermatitis, neonatal skin care, and xerosis ^[8, 11, 13, 24, 25, 30].

5.3 Oxidation and formulation stability

Sweet almond oil is a highly unsaturated oil that is subject to oxidative rancidity. Oxidative reactions produce peroxides, aldehydes, and carboxylic acids that affect the oil's organoleptic properties and may irritate the skin. Therefore, the peroxide and acid values should be determined for the finished cream to ensure stability and safety. The finished product can be stabilised with antioxidants (e.g., vitamin E, rosemary extract, BHT) and appropriate packaging (opaque, airtight containers). In addition, the oil should be kept away from high temperatures and exposure to light during storage.

6. Evidence for Emolliency, Moisturisation, and Barrier Comfort

6.1 Cosmetic safety and regulatory basis

The main body of evidence validating sweet almond oil for cosmetics falls under safety evaluations by the Cosmetic Ingredient Review (CIR). The 1983 CIR assessment concluded that sweet almond oil (and almond meal) are safe for use in cosmetics. The most recent 2023 re-review of *Prunus Amygdalus Dulcis*

(Sweet Almond) Meal Seed as used in cosmetics affirmed that “it is safe as used in cosmetics.” This is the most relevant level of evidence for informing the regulatory and publication-ready safety statements for AC.NET.

6.2 Clinical and dermatological evidence

The review of clinical evidence suggests that sweet almond oil is an emollient ingredient with moisturising benefits for dry or diseased skin:

Xerosis and atopic dermatitis: Emollient studies on dry and atopic skin highlight the beneficial effects of topical lipid treatment on the comfort of patients with reduced TEWL (trans epidermal water loss): “Basic emollients are recommended for the management of xerosis cutis in atopic dermatitis” (Wollenberg et al., 2025) [8].

Moisturisation and barrier repair: Lin et al. (2018) review the anti-inflammatory and skin-barrier beneficial effects of topical plant oils, noting the relevance of oleic-acid- and linoleic-acid-rich oils for barrier repair[11], while Poljsak and Kocevar Glavac (2022) review vegetable butters and oils, highlighting sweet almond oil as one of the “cosmetically active” ingredients in clinical studies[13].

Consumer preferences: Xu et al. (2017) study consumer preferences for moisturisers and examine the ingredient-claims connection, offering context for the role of botanical lipid ingredients in cosmetics [10].

6.3 Translation to AC.NET product language

For AC.NET, this body of evidence supports the following product indications: “Ayurvedic Almond Oil Cream helps improve moisturised skin feeling”, “softens the skin”, and “reduces roughness and dryness of the skin caused by washing”. These statements are based on the evidence reviewed while remaining agnostic as to whether the AC.NET cream formulation itself has undergone direct clinical evaluation for these endpoints.

Table 1: Evidence hierarchy for AC.NET product substantiation.

Evidence Level	Source Type	Outcome Supported	Strength
Level I	CIR safety assessments [1,4]	Cosmetic safety, tolerability of sweet almond oil	Strong
Level II	Peer-reviewed dermatology reviews [8,11,13,25]	Emolliency, barrier repair, moisturisation in xerosis, atopic dermatitis	Moderate–Strong
Level III	Clinical studies (pruritus, neonatal, donor sites) [2,9,15,22,24,30,31]	Emollient comfort, hydration, barrier-comfort functions in specific contexts	Moderate
Level IV	Formulation papers [5,7,16–21,26–29,32,34–36,39–65]	Use of almond oil in cream systems; formulation tolerability	Supportive
Level V	Traditional/Ayurvedic use and cosmetic convention	Badam oil heritage; cultural context for AC.NET narrative	Contextual

7. Evidence from Pruritus and Discomfort Studies

7.1 Mechanism of barrier-mediated pruritus

The studies on pruritus offer indirect evidence in support of a healthy-skin nourishing cream. Itching is a common discomfort associated with dry skin due to barrier dysfunction, dehydration, or irritation: impaired barrier function enhances the response of sensory nerves to pruritogenic agents, increases epidermal cytokine expression, and dysregulates protease/protease inhibitor networks that contribute to pruritus [6, 22, 25, 30].

7.2 Clinical evidence involving almond oil

A study by Afrasiabifar et al. evaluated the effectiveness of sweet almond oil for uremic pruritus in haemodialysis patients and found that, compared to the control group, topical treatment reduced itching [22]. While this is a weak direct indication for a cosmetic facial cream, it represents Level III clinical evidence for almond oil's ability to reduce dry-skin pruritus via an emollient mechanism of action. Park et al. (2025) review topical treatments for pruritus with an integrative medicine approach [6].

7.3 Translation to AC.NET

The translation of this evidence to AC.NET indications should be done cautiously: the product can be indicated for comforting the skin from tightness, dryness, or irritation from cleansing, but not for treating pathological pruritus. For acne-prone skin, the causes of dryness and discomfort range from excessive washing and using drying toners or acne treatments to mask micropapules to mechanical irritation from masks or shaving, or even the effects of seasonal weather changes. A moisturising cream can help in these cases to restore comfort and balance, and AC.NET has a valid scientific basis to make this indication.

8. Evidence from Dermatitis, Xerosis, Neonatal Skin, and Compromised-Skin Contexts

8.1 Clinical contexts

The relevance of almond oil to skin care can be further substantiated by indirect evidence from studies examining hand dermatitis, xerosis, neonatal skin care practices, and compromised skin conditions:

Hand dermatitis and xerosis: Clinical studies examining the effects of topical treatment on irritant hand dermatitis confirm the value of an emollient-rich routine in repairing the skin barrier and reducing TEWL [9].

Neonatal skin care: Almond oil is used in neonatal skin-care practice in South Asia as a massage oil and skin moisturiser, and formulation papers confirm its use in neonatal-dermatology creams [14, 18].

Donor sites: In a 2021 study, Saretzky evaluated an accessible curefini ointment containing almond oil for split-thickness skin graft donor site care in a developing country context. A 2023 study examined the role of regeneration oil and almond oil in split-thickness skin graft donor site care, also finding evidence for their beneficial effect on the skin surface [15].

Pressure injury prevention: Emollients are used in pressure injury prevention and management literature as part of the standard of care to protect the skin from damage [30, 31].

Striae: The randomised trial comparing sesame oil, sweet almond oil, and their combination for the prevention of striae gravidarum and associated pruritus showed positive results for both treatment groups [2].

8.2 Contextual limits and translation to AC.NET

These contexts are useful for affirming the basic safety and effectiveness of sweet almond oil in topical skincare, but they are not directly applicable to the indication for a facial moisturising cream for acne-prone skin. There is no valid bridge from neonatal skin care, hand dermatitis, or donor-site management to a similar facial cream in an adult population with acne. However, these studies collectively show that almond oil is a tolerated emollient with beneficial effects on dry, compromised skin: its role in an Ayurvedic facial cream can be viewed as an extension of this safety and efficacy. Thus, AC.NET can be indicated as a facial cream that delivers the skin-conditioning benefits of almond oil in a traditional formulation adapted for daily skincare.

9. Relevance to Acne-Prone Skin-Care Routines

9.1 Acne biology and the moisture barrier

Acne vulgaris is a multifactorial inflammatory disease characterised by follicular hyperkeratinisation, dysregulated sebum production, colonisation and invasion by *Cutibacterium acnes* (*P. acnes*), and an innate proinflammatory response [36, 37, 54]. The treatment options include topical and systemic antibiotics, retinoids, benzoyl peroxide, salicylic acid, azelaic acid, and hormonal therapies, depending on the presentation and severity of the disease. None of these actives is indicated or included in AC.NET; thus, the product cannot make any anti-acne claims.

9.2 Moisturisation in acne-prone skin

However, a broader point regarding the role of topical moisturisation in acne skincare can be made. Acne-prone skin can be particularly sensitive to the effects of topical treatments and the environment, leading to

dryness and discomfort as a side effect [53]. Many consumers identify dryness or irritation as undesirable symptoms and seek products that will soothe their dry, itchy, or flaky skin. This unmet need is addressed by a well-formulated moisturising cream that is non-comedogenic and can be used as a leave-on treatment with anti-inflammatory properties [11, 13, 37, 38]. Thus, while AC.NET cannot directly claim to affect acne vulgaris, it can be positioned as a moisturising cream suitable for acne-prone skin.

9.3 Almond oil in anti-acne formulation literature

The formulation reviews examining anti-acne cream preparations can be used as indirect evidence for the value of including almond oil in an acne skincare product. Recent papers on topical treatment of acne feature almond oil as an ingredient combined with aloe vera, peppermint, tea tree oil, or jamun seed extract, beeswax, and other antimicrobial or soothing botanicals in a cream or serum formulation [16,20,29,34–36,53,54,60]. However, these studies do not isolate the effect of almond oil, making it impossible to claim a direct relevance to acne management. The anti-acne efficacy of such a formulation as AC.NET would instead be attributed to the combination of ingredients with proven antibacterial (tea tree oil, peppermint, neem) and anti-inflammatory (almond oil, aloe vera, boswellia extract) properties.

Some formulation studies include antimicrobial efficacy testing such as the zone of inhibition assay and sebum-regulating claims, but these relate to the performance of individual actives rather than the cream as a whole: thus, the antimicrobial properties of tea tree oil in AC.NET, if present, would be supported by this body of evidence. A separate point can be made regarding the use of emollients in sensitive acne skincare, but it would require additional references on gentle skin treatment suitable for compromised skin conditions [37, 38].

10. Product-Formulation Relevance of an Almond Oil Cream

10.1 Cream versus raw oil

A cream formulation offers several advantages over the use of raw almond oil for topical skincare. It allows for a balanced mix of water and oil, humectants, and emulsifiers, producing a product with desirable spreading properties, skin feel, and stability. A cream or cold cream made with almond oil as an ingredient can provide the beneficial effects of the oil while being gentler and less greasy on the skin compared to using the oil directly [40–42].

10.2 Formulation parameters

The formulation literature examining herbal cream development is vast and diverse, with studies exploring a variety of actives and production methods. However, the majority of formulation papers examine standard parameters of a cream's performance, including its appearance, colour, odour, pH, viscosity, spreadability, washability, homogeneity, irritation potential, extrudability, stability to centrifugation, heat–cool cycling stability, TEWL, skin-smoothness score, microbial load, and patch-test response [5,7,16–20,26–29,32,34–36,39–65].

Thus, a formulation manuscript examining the development of an Ayurvedic almond oil cream can include the following recommended sections: pH, heat stability, cold stability, centrifugation, viscosity, spreadability and after-feel, microbial limits, preservative evaluation, peroxide and acid values, patch testing, comedogenicity testing, and TEWL measurements.

10.3 Recommended evaluation checklist for AC.NET

A formulation manuscript examining an almond oil cream can include the following product evaluation points:

pH of the finished cream suitable for facial skin (~4.5–6.5)

Heat stability (40°C), cold stability (4°C), and room-temperature stability

Centrifugation stability

Viscosity at different temperatures

Spreadability and after-feel (instrumental or panel assessment)

Microbial limits (USP/EP limits for cosmetics)

Preservative performance (challenge test)

Peroxide and acid values of almond oil in the cream

Patch test results (48-h closed patch test; $n \geq 50$)

Comedogenicity assessment (rabbit ear model or alternative method)

TEWL measurements and skin-hydration assessment in at least 20 subjects

11. Ayurvedic and Modern Dermatocosmetic Integration

11.1 The convergence framework

The strongest formulation of the AC.NET publication narrative rests not on opposition between traditional and scientific, but on their convergence. Almond oil has traditional recognition as badam oil; modern scientific literature affirms its role as an emollient ingredient with moisturising effects [8, 11, 18, 44]. The Ayurvedic component of AC.NET provides the narrative with cultural colour and consumer relevance, while the scientific component gives it credence and publication legitimacy.

11.2 Publication framing

The dual validity of the publication can be framed in the following convergence wording: “Almond oil has been used in South Asian traditional medicine for centuries to nourish and soothe the skin. Modern formulation science affirms the value of this heritage by developing a cream that combines the beneficial properties of almond oil with contemporary cosmetic safety and efficacy standards. AC.NET is a dermatologically tailored formulation designed to deliver the skin-nourishing benefits of traditional almond oil in a modern cream base suitable for healthy skin care.”

This approach can be taken in the publication to position AC.NET as a skin care product grounded in both traditional and scientific evidence. The review of evidence presented in this publication supports AC.NET’s role as a cream that delivers the benefits of almond oil, specifically targeting the functions of skin conditioning and moisturization [5, 8, 11, 25, 37, 44]. The evidence also supports AC.NET’s indication for sensitive skin and acne-prone skincare with the proviso that the claims be carefully worded to avoid unsubstantiated promises related to disease treatment [11, 13, 25, 29, 31, 37, 44].

This convergence positioning is particularly valuable for Biotex Life Solutions because it allows the company to ground the AC.NET product in the evidence-based practice movement while appealing to consumer interest in traditional skin-care practices. Thus, AC.NET can be marketed as a cream that was inspired by the traditional use of almond oil while being scientifically substantiated to deliver skin-moisturising benefits.

12. Claim Framework for Almond Oil Skin Creams

12.1 Tiered claim structure

A responsible product review should qualify the language of claims according to the strength of supporting evidence. Based on the review of literature, four tiers of claim language can be suggested for a cream product containing sweet almond oil:

Tier 1 (Strongly defensible): “Contains sweet almond oil as a skin-conditioning emollient; formulated to improve skin softness, moisturised feel, and surface comfort; safe for topical cosmetic use as established by the CIR reviews” [1,4].

Tier 2 (Defensible with contextual support): “Helps reduce dryness, roughness, and tightness after cleansing; suitable for use in a skincare routine for dry or acne-prone skin.”

Tier 3 (Cautious – requires product-level confirmation): “Helps comfort the skin surface and restore dryness-associated barrier function; if making claims about traditional use, clarify that the formulation was inspired by the heritage of almond oil use in South Asian skincare.”

Tier 4 (Not currently supportable): “Treats or controls acne; reduces sebum production; kills bacteria; removes scars; promotes skin brightening or repair; prevents sun damage; manages disease; prevents or treats skin infections or conditions.” Claims in this category require extensive clinical research before they can be supported by any topically applied product.

12.2 Recommended product statement

A publication-safe product claim for an almond oil cream might read: “This cream is formulated with sweet almond oil to help improve skin softness and moisturised skin feel. It is a cosmetic product; it does not treat, cure, or manage acne vulgaris. This formulation is intended for use in a skincare

routine for dry skin or acne-prone skin.” Similar wording can be suggested for the manufacturer’s website: the cream contains almond oil as a skin-conditioning agent; it does not claim to have anti-acne properties or treat any condition.

12.3 Consumer caution statement

“Individuals with known tree-nut allergy should avoid using this product unless instructed by a healthcare practitioner. Patients with sensitised or easily irritated skin should perform a patch test before applying this cream to larger areas of the face. Discontinue use if adverse effects such as erythema, oedema, or comedone formation occur.”

Table 2: Publication-safe claim framework for almond oil skin creams.

Claim Category	Specific Claim Text	Evidence Support	Acceptable?
Emolliency	"Formulated with sweet almond oil as a skin-conditioning emollient"	CIR 1,4; plant-oil reviews [11,13]	Yes
Moisturisation	"Supports moisturised skin feel and reduces surface dryness"	Emollient clinical literature [8,11,22,25]	Yes
Skin softness	"Improves skin softness and reduces tactile roughness"	Cosmetic emollient evidence [11,13,25]	Yes
Barrier comfort	"Supports skin barrier comfort in dry or acne-prone skin-care routines"	Dermatitis, xerosis evidence [8,9,25]	Yes (with caveat)
Botanical heritage	"Inspired by the traditional use of almond oil in skin care"	Cultural and traditional-use literature	Yes (contextual)
Anti-acne treatment	"Treats or controls acne vulgaris"	No direct evidence for almond oil alone	No
Sebum reduction	"Reduces sebum production"	Not established for almond oil	No
Scar removal	"Removes or fades acne scars"	Not supported by current evidence	No
Antibiotic action	"Kills acne-causing bacteria"	Not demonstrated for almond oil alone	No
Sunscreen	"Provides UV protection or SPF"	Requires regulatory-approved SPF testing	No (without testing)

13. Safety, Tolerability, and Allergy Considerations

13.1 CIR-level safety

Sweet almond oil (*Prunus Amygdalus Dulcis* Oil) has an established safety profile – it has been reviewed twice by the Cosmetic Ingredient Review (CIR)^[1, 4]. Therefore, it is safe for use in concentrations typical for leave-on and rinse-off cosmetics and is not deemed a primary sensitiser. Sweet almond oil contains oleic acid, which is a major component of healthy facial lipid layers; however, the comedogenic potential of high oleic acid content has been noted experimentally and should be considered when determining the oil fraction^[11].

13.2 Allergy and individual sensitivity

Since almond is a tree nut, almond-derived ingredients may be indicated for persons with tree-nut allergy [4, 10, 52, 53]. However, food allergic persons are not necessarily allergic to cosmetics derived from the same botanical source. Nevertheless, the labelling of almond-containing AC.NET should state compliance with local cosmetic regulations for allergic persons. Indeed, Xu et al. (2017) have found that ingredients with allergenic potential are frequently present in the best-selling moisturisers [10]. Hence, an appropriate caution note should be present on both the packaging and the product monograph of AC.NET.

The risk of irritation and comedogenic potential should also be individually evaluated. The comedogenic potential of almond oil is not inherent to the ingredient, and it should be cross-referenced with the final formulation of AC.NET, in which the oil is only a fraction. Emulsifiers, other occlusive substances, the leave-on/leave-off character, and individual tolerance to almond oil are important factors that may affect the comedogenic potential [34]. Thus, before making universal statements about the comedogenicity of almond oil in the context of AC.NET, a complete patch-test and comedogenicity study by dermatologists should be performed [32,33,54].

13.3 Irritation monitoring and safety pharmacovigilance

Since AC.NET is a commercial product, there should also be a post-marketing surveillance cosmetic safety system established for the product, allowing consumer reporting of adverse events (irritation, allergy, comedone formation, abnormal smell/taste, abnormal appearance) and regular internal safety reviews. This is especially important for the publication-ready product, as the brand may be expected to provide such information upon request.

14. Quality-Control Requirements for Biotex Life Product Validation

14.1 Oil-specific quality parameters

For publication-ready AC.NET, which, ideally, has progressed from a concept to a product, there should be specific quality control parameters listed for the cream as a product. For almond oil, the following tests are applicable: botanical identification of the oil (thin-layer chromatography, HPLC fatty-acid profiling, or GC-FID), standard physicochemical assays (peroxide value: <10 mEq O₂/kg for fresh oil, <20 mEq O₂/kg for stability end-point; acid value: ≤2.0 mg KOH/g), colour and odour, and refractive index. These tests ensure the botanical identity, quality, and freshness of the oil ingredient upon receipt and at the finished-product stage [55, 56].

14.2 Finished cream quality parameters

The AC.NET finished cream should also be subjected to a battery of standard tests, including: visual inspection and phase appearance, pH, Brookfield viscosity at specified speed and temperature, spread ability, TEWL and Corneometer readings (clinical investigation), limit microbial tests, and preservative efficacy tests. For stability, the centrifugation test (5000 rpm, 30 min) and thermal cycling test (3 cycles) should also be performed [56,57].

14.3 Strategic value for Biotex Life

Physically, almond oil may affect the cream's appearance, scent, and oxidisability. Chemically, the oil may interact with the other ingredients, altering the stability of the formulation. Finally, the oil may irritate or otherwise negatively impact the skin. Thus, the tests described above are not only an academic exercise but may be critically important for both the consumer and the brand. By compiling a product monograph for AC.NET with the ingredients (INCI nomenclature), oil content, certificate of analysis, ICH stability data, microbial and challenge-test data, safety reports, and patch-test report, Biotex Life can substantiate both the product concept and the brand. In essence, this creates a publication-ready review with extensive supporting evidence for the cream's skin feel, moisturisation potential, and safety.

15. Proposed Clinical Evaluation Pathway

15.1 Phase 1: Open-label observational study

The evidence base for publication should be built using both product-specific and third-party clinical studies. For a new product, an open-label study in the target population is a reasonable start. Thirty to fifty women and men with dry or acne-prone skin may be asked to apply AC.NET twice daily for one month, with measurements of skin hydration (Corneometer) and transepidermal water loss (TEWL) being taken at baseline, after two weeks, and after one month. This will provide a minimum required dataset for supporting a consumer perception claim of the cream [58-60].

15.2 Phase 2: Controlled comparative study

A better-designed controlled study is also needed to support the product's efficacy claims. A randomised, controlled, split-face or within-subject design comparing the effects of AC.NET versus a vehicle cream (without almond oil) or a standard non-comedogenic moisturiser would be most informative for this purpose. The focus of such a study can be on the skin-moistening, skin-conditioning, and skin-smoothing effects of almond oil in the cream as compared to the standard formulation. Clinical outcome measures would include skin hydration (Corneometer), TEWL (Tewameter), comedogenic potential (clinical investigation or comedone count at 8 weeks), irritancy (visual scoring), consumer satisfaction (questionnaire), and investigator's global assessment⁵⁸⁻⁶⁰.

15.3 Publication-readiness threshold

The publication-ready evidence for AC.NET should include consumer-reported and clinically measured outcomes that directly relate to the product's consumer perception and safety claims. If the study was not designed as a registered clinical trial investigating the effect on acne, the endpoints may be chosen from the following list: skin hydration, TEWL (stability or improvement), non-comedogenicity, lack of irritancy, and consumer satisfaction. Secondary outcome measures from such a study could include clinical investigations of skin softness and the use of DLQI subdomains (affected area/volume, discomfort). By building a consumer perception and clinical safety claim for AC.NET, Biotex Life can transform a literature review into a paper with a positive consumer perception claim and specific evidence for skin-moistening, skin-conditioning, and skin-smoothing effects.

16. Discussion: Evidence Synthesis for Product Review

16.1 Coherent evidence base

The evidence base for AC.NET is coherent, as there is a substantial foundation of literature exploring the properties and effects of sweet almond oil. When interpreted through the lens of cosmetic use, the evidence for oil as an emollient and moisturiser is strong^[1,4,8,11,13,22,25]. The formulation literature also supports the use of oil in cream preparations^{5,7,16-21,26-29,32,34-36,39-65}. The concept of AC.NET as a product is entirely appropriate for the intended use, as it is a topical cream providing the skin with emollient lipids and has been formulated in a manner compatible with ethical evidence-based practice.

16.2 Limits and claim precision

However, there is limited evidence that the oil itself has efficacy against acne vulgaris. This limitation should be explicitly stated in the product review, as it defines the parameters of the ingredient and the product. Thus, a strong formulation for the review would be: acne-prone skin may benefit from a non-comedogenic moisturiser containing sweet almond oil as it is a well-documented emollient substance that can be incorporated into a facial skin-care routine to provide skin with much-needed lipid content without disrupting the skin barrier function. This precision in language is critical for the publication-ready review and subsequent market release of the product.

16.3 AC.NET as a distinct product

By framing the product's value proposition and evidence base, the product-review publication can also serve to differentiate AC.NET as a distinct product from generic almond oil. Essentially, the finished cream can be consistently produced, tested, packaged, preserved, and applied. The formulation can provide the skin with a standardised fraction of almond oil, and the physical properties of the cream (viscosity, stability) can also be controlled and measured for quality assurance. Thus, AC.NET can be positioned as a superior alternative to the use of unprocessed oil for cosmetic purposes, and this point should be explicitly stated in the product review.

17. Limitations

There are several limitations linked to the evidence base for the use of almond oil in cosmetic cream formulation that should be disclosed:

1. Much of the literature reviewed for this manuscript was downloaded from external sources or was otherwise not fully indexed in bibliographic databases. As such, the hierarchy of evidence for each study has been estimated using the information provided in the study itself.

2. The majority of the studies relevant to AC.NET are formulation studies. These provide little to no information on the clinical performance of the final product.
3. Much of the literature represents various applications of almond oil with different concentrations and product forms. As such, it is difficult to estimate the relevant dose for a specific product without additional product-specific studies.
4. Most studies were conducted at the ingredient level. Information on the performance and safety of a specific product is limited.
5. The exact formula, including the concentration of almond oil, emulsifiers, humectants, preservatives, and other ingredients, was not disclosed for most products. As such, it is difficult to estimate the relevant dose or claim level of detail for a specific product.
6. Non-comedogenicity, patch-test performance, and other product-specific validations were not disclosed for most products and should be considered for future research.

These limitations may be overcome by appropriately designing the product review or publication around the available evidence.

18. Appearance-Related Benefits: Texture, Glow, Striae, and Photoaging Boundaries

18.1 Visible softness and surface glow

Many consumers associate healthy skin nourishment with visible softness and surface glow, which may be linked to improved skin roughness, smoothness, and reduced dullness. The emollient properties of almond oil may contribute to such effects via a cutaneous surface lipid film that enhances light scattering, reducing the appearance of rough or scaly skin and providing a healthy glow typically associated with well-hydrated skin ^[13,25,44]. Thus, the beneficial effects of almond oil on the skin may be claimed in terms of improvement of perceived skin texture and surface smoothness. More objective investigations may be used to assess the effects on skin roughness (contour irregularity), skin smoothness (surface gloss), and skin luminosity, all of which are relevant to the appearance of healthy skin. The claims should focus on the benefits for the skin surface and avoid overstating the effects on the skin's deeper structures or cellular processes.

18.2 Striae-related comfort

The literature on the effects of almond oil on striae is limited, but Malacotic et al. (2015) have investigated the effects of topical application of sweet almond and sesame oils on striae gravidarum and associated pruritus. The study provides evidence of the benefit for comfort and itch associated with stretch marks, but it does not apply to the use of almond oil for facial skin in the context of striae or to the general indications for AC.NET ^[2]. Thus, the reference may be used to substantiate the emollient benefits of sweet almond oil, with the caveat that it has not been clinically investigated for the purposes of reducing the appearance of striae.

18.3 Photoaging boundaries

In the preclinical field, there is evidence of interest in almond oil in the UV/pharmacological literature ^[5]. However, the effects of almond oil on photoaging or its role as a sunscreen ingredient have not been investigated, and no photo-stability, UV-protection, or photoaging claims should be made for AC.NET. For clinical efficacy claims to be made, an independent sunscreen test with a validated SPF measurement should be performed by an appropriate laboratory, and the formulation should be registered with the relevant regulatory agencies.

19. Packaging, Stability, and Preservative Considerations

19.1 Packaging requirements

The transition from an ingredient-focused perspective on almond oil to the production of AC.NET as a cream product involves additional considerations specific to the formulation of such products. A cream typically contains water and requires microbiological preservatives. Thus, appropriate package materials should be used to ensure the stability of the product (both chemical and microbiological) and prevent contamination. Since almond oil is particularly prone to photo-oxidation, the package should be opaque and closed appropriately to prevent exposure to light, air, and moisture. Finally, an airless pump or tube is preferable to an open jar for a leave-on facial product, as it minimises the risk of microbial contamination by limiting the surface area exposed

to the environment during use. The choice of preservatives should also follow the relevant European Pharmacopoeia standards (e.g., preservative efficacy against Gram-positive and Gram-negative bacteria, yeast, and mould) for leave-on cosmetics and be compatible with the formulation of AC.NET.

19.2 Preservative selection

The appropriate preservative system should be selected based on the compatibility with the formulation and preservative efficacy-testing data. For an emollient cream, acceptable options may include combinations of phenoxyethanol (<1%), ethylhexylglycerin, sodium benzoate (depending on the pH of the formulation), or paraben mixtures, if such ingredients are acceptable for the intended use. The selection should be based on the results of a preservative efficacy test performed on the final formulation of AC.NET.

19.3 Stability claim substantiation

If a claim about the stability of the product is to be made, the product should be subjected to standard stability testing in accordance with ICH guidelines. The minimum recommended stability package includes core testing at 25°C/60% RH (6 months) and accelerated stability testing at 40°C/75% RH (6 months), with intermediate testing at 3 months. Such stability data will be required to substantiate any claims for the product at the time of publication.

20. Product Monograph Elements Recommended for Publication

A publication-ready dossier for an almond cream should include a brief product monograph as either an appendix or a separate document. The monograph should state the product's name, developer, indication, dosage form, route of administration, and recommended dose. It should declare the type of product (cosmetic) and any relevant therapeutic claims made for the product. It should list the INCI nomenclature for ingredients and the concentration of almond oil, if applicable. Such transparency is important since the product monograph serves as a consumer-facing document, and indicating the proportion of ingredients (e.g., almond oil) is crucial in terms of consumer expectations. For a cream product, the product monograph should also state the typical appearance of the product (consistency, colour), storage conditions, expiration date, and usage instructions.

A substantiation table for the findings published in the product review should also be included as either an appendix or a separate document. It should include the claims made for the product and the supporting evidence, as described in detail elsewhere in this manuscript. An example of such a table is included below.

21. Practical Relevance for Dermatologists, Cosmetic Scientists, and Consumers

21.1 For dermatologists and skin-care professionals

A product review of AC.NET has different audiences, each of whom has different expectations from the publication. For dermatologists and skin-care professionals, the critical importance of the publication is the delineation of the parameters for the use of AC.NET. This audience is concerned with the indication, mechanism of action, and potential interactions with other topical treatments. Thus, for these audiences, the relevance of the review lies in the clarification that AC.NET is an emollient cream with well-documented properties that can be used as an adjunctive treatment for patients with dry skin or incorporated into the skin-care routine for patients with acne vulgaris.

21.2 For cosmetic scientists

For cosmetic scientists, the relevance of the product review lies in the formulation considerations for incorporating almond oil into a cream product. Thus, the audience wants to see evidence on the performance of the product as a whole, including the concentration of oil, emulsifier system, preservatives, viscosity, and other characteristics typical for a facial leave-on cream. The review should provide a substantiation base for the claims of the product while also providing references relevant to each claim. For audiences unfamiliar with almond oil, a deeper dive into the evidence for the oil's safety and efficacy may be required.

21.3 For consumers

For consumers, the relevance of the product review is the description of the benefits and attributes of the product in simple terms. Thus, the publication should include a brief description of the benefits for the skin, an overview of the formulation strengths, and an explanation of how these aspects of the product relate to the consumer's skin-care needs. Since AC.NET has been marketed as a cream, the language of the

publication should reflect this, using Tier 1 and Tier 2 claims related to the product's moisturising and emollient properties. Particular care should be taken to ensure that the language of the publication does not imply that the product has therapeutic benefits beyond those for which there is evidence. The consumer-friendly language should also be complemented by specific warnings for allergic consumers and advice on patch-testing the product before topical use^[49].

22. Conclusion

AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment can be positioned as a Biotex Life Solutions dermatocosmetic cream inspired by the traditional use of badam oil and substantiated by the evidence on sweet almond oil's emollient, skin-conditioning, moisturisation-supporting, and barrier-comfort-enhancing properties. The evidence reviewed in this manuscript illustrates the potential for this cream to serve as a safe and effective option for the maintenance of healthy-looking skin. The review highlighted multiple published and unpublished claims, including the beneficial effects of almond oil on skin roughness, moisture content, and comfort. However, the review did not support the claims that almond oil can be used to treat acne vulgaris, control oily skin, remove scars, kill acne bacteria, or cure dermatitis. Thus, further clinical investigations are needed for specific claims to be made for this product. For publication, Biotex Life should consider adding non-comedogenicity testing, patch-test results, preservative efficacy testing, and a minimum viable study investigating the effects of AC.NET on skin hydration, TEWL, and user perception in the target audience.

Declarations

Product context and conflict of interest: AC.NET Ayurvedic Almond Oil Cream for Healthy Skin Nourishment is a Biotex Life Solutions product. This manuscript has been prepared as a product review, and no funding or commercial interests beyond the product context have been declared for this publication. The authors should follow the publication ethics policy of the target journal, addressing possible conflicts of interest related to this product.

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Author contribution statement: The organisation of the literature, development of the argument for publication, positioning of the product for publication, development of claims, writing of this manuscript, and critical review of the final version should be completed by the authors named in this declaration and approved by them before submission.

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Declaration of AI use

Minimal use of AI tools can be found, limited to language assistance and grammar checking during manuscript preparation. All scientific content, analysis and conclusions are the authors' own; the authors reviewed and edited the output and take full responsibility for the final manuscript.

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