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Management of Dermatological Conditions

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Introduction

The epidermis, being the largest organ within the human body, functions as the primary protective barrier against a multitude of environmental threats, heavy metals, viruses, and infections. Currently, the level of technological advancement is inadequate to effectively provide a diverse array of items, such as biotechnology-based therapies, lubricants, vitamins, nutraceuticals, and pharmaceuticals.

Moreover, it has constraints in its ability to effectively monitor and discern the specific requirements of the epidermis. Despite being exposed to ideal conditions, the epidermis exhibits significant deficiencies in a number of critical characteristics, including pH regulation, conductivity, resistance to solvents, water, and chemicals, flexibility, and durability (Telange et al. 2022). Currently under review is an epidermal coating concept, referred to as the "Nanotechnology Super Skin Coating," which is in the patent-pending evaluation phase. This innovation serves as a primary defense mechanism that effectively mitigates potential risks, including but not limited to infectious diseases, hazardous heavy metals, and environmental pollutants. The epidermal coating generation process involves the controlled integration of iron oxide nanoparticles with a solution containing citric acid, stabilized ionic silver, and nano-sized zeolite. This proprietary technique, developed by Dr. Rahm, enables the formation of conductive nano-mesh architectures within sensor systems, yielding materials with exceptional properties, including ultra-thin profile, high flexibility, fire resistance, gas permeability, lightweight structure, and enhanced structural integrity with minimal defect potential. Over the past few years, significant technological progress has enabled the epidermis to evolve into an autonomous wireless system with the ability to detect, identify, and eradicate a diverse array of infections. Pathogens comprise an extensive array of origins, including microorganisms, heavy metals, radioactive debris, organic substances, and pesticides and herbicides. These deleterious substances are recognized for their ability to accelerate the aging process and impede the progression of diseases through the promotion of skin tissue regeneration.

The presence of many skin problems presents a substantial challenge within the healthcare sector due to the wide range of conditions they entail. While conventional therapy methods often rely on medication, there has been a notable surge in interest towards alternative treatment modalities. This essay undertakes a critical analysis of the topic of alternative medicine, with a specific focus on chemicals including vitamin C, zeolites, hypochlorous acid, potassium iodine, and silicas. The primary focus of these materials is their capacity to offer skin safeguarding against a diverse range of harmful substances, including heavy metals, electromagnetic field (EMF) radiation, microbes, viruses, parasites, bacteria, fungi, and radioactive waste particles, in addition to microbes, germs, and contaminants.

Additionally, the essay highlights the worldwide utilization of medicines and alternative approaches in the treatment of dermatological conditions.

Acne and dermatitis represent less severe manifestations of skin disorders, whereas melanoma and psoriasis exemplify more severe manifestations of the same category of diseases. Corticosteroids, antibiotics, antifungals, and immunosuppressants are commonly employed in traditional therapy modalities. Notwithstanding the advantages, there exist numerous disadvantages and constraints linked to these pharmaceutical substances. In recent years, there has been a significant amount of interest directed towards the exploration of unconventional approaches and alternative therapies aimed at enhancing skin health and resilience. These alternative therapeutic methods place a high emphasis on safeguarding the skin through the utilization of the unique features exhibited by organic substances. Aloe vera, vitamin C, potassium iodine, zeolites and silica, and hypochlorous acid are among the chemicals frequently utilized in various applications.

Current scientific inquiry is focused on the evaluation of alternative therapeutic approaches; several studies have provided insights into the potential benefits associated with these substances (Patel et al. 2021). Currently, the majority of research efforts are devoted to examining the radioprotective attributes of potassium iodine, the antibacterial potential of hypochlorous acid, and the detoxifying properties of silica and zeolites. Several unconventional approaches are also being explored. An added benefit of investigating alternative approaches to treating dermatological disorders is the possibility that natural components could synergistically complement or replace conventional pharmaceuticals on an international scale. Multiple factors have contributed to the growing prevalence of botanical pharmaceuticals in modern healthcare. First, patients often demonstrate greater tolerance to these therapies compared with many conventional treatment approaches. Herbal medicines are also valued for their sustained physiological activity and relative stability, allowing for prolonged access to their therapeutic benefits. In addition, they are generally associated with a lower incidence of adverse effects, which further supports patient compliance and long-term use.

From an economic and logistical perspective, botanical pharmaceuticals are typically more cost-effective and readily accessible than many synthetic alternatives. Collectively, these attributes have led to their widespread use in the management of a broad range of chronic conditions, including disorders for which definitive conventional treatments remain limited or unavailable (Izah et al., 2023). Herbal therapies may be employed either as standalone interventions or as adjuncts to conventional medical treatments. In certain clinical contexts, they are intentionally combined with synthetic pharmaceuticals to reduce treatment-related side effects and to enhance preventative or therapeutic outcomes.

Non-traditional treatment and global treatment suggestions for various skin conditions

The following list includes several dermatological disorders, including both conventional pharmaceutical treatments and alternative therapeutic methods. A variety of skin conditions are managed worldwide using both conventional pharmaceutical therapies and alternative or complementary treatment approaches. Acne vulgaris, in particular, has been extensively studied, resulting in global clinical guidelines that emphasize individualized treatment strategies. These approaches are designed to address the multifactorial nature of acne, incorporating topical therapies, systemic medications, or a combination of both depending on disease severity.

Acne Vulgaris: Global Treatment Guidelines

International guidelines for the management of acne vulgaris recommend treatment plans based on clinical severity, which ranges from mild to severe or treatment-resistant disease. Acne treatment typically involves the use of topical agents, oral medications, or combination therapies. The selection of therapy is guided by lesion type, distribution, patient tolerance, and response to prior treatment.

Management of Mild Acne

Mild acne is most commonly managed with topical therapies, which serve as first-line interventions. Topical retinoids such as tretinoin, tazarotene, and adapalene are vitamin A derivatives that promote epidermal cell turnover and prevent the formation of comedo-

nes. These agents improve both inflammatory and non-inflammatory lesions; however, visible clinical improvement may take several weeks of consistent application to clean, dry skin. Topical antibiotics, including clindamycin and erythromycin, are also widely used in mild acne management to reduce colonization of acne-associated bacteria and to suppress inflammation. These agents are rarely used alone and are instead combined with other topical treatments to enhance efficacy and reduce the risk of antibiotic resistance. Benzoyl peroxide is frequently incorporated into treatment regimens due to its antimicrobial, anti-inflammatory, and comedolytic properties. It is available in a variety of formulations, including cleansers, gels, and lotions, and is commonly used as part of daily skincare routines (Pattinson et al., 2022). The combined use of topical retinoids and benzoyl peroxide is considered a standard and effective approach for mild acne.

Moderate to Severe Acne

Moderate to severe acne, particularly cases that do not respond adequately to topical therapy alone, requires more aggressive and individualized management. Treatment strategies typically involve the concurrent use of topical and systemic therapies to address the complex pathophysiology of acne. Topical retinoids continue to play a central role by regulating keratinization and reducing comedone formation, while topical antibiotics and benzoyl peroxide help control bacterial growth and inflammation. Systemic antibiotics such as doxycycline, minocycline, and tetracycline are commonly prescribed to reduce bacterial proliferation and inflammatory activity. These oral agents exert both antimicrobial and anti-inflammatory effects and are often used for limited durations to minimize resistance. Adjunctive procedures, including chemical peeling agents such as salicylic acid and Jessner's solution, may also be employed to enhance lesion clearance and improve skin texture.

Hormonal Therapies and Adjunctive Management

Hormonal modulation is an important consideration in the management of acne in female patients, particularly in hormonally driven or adult-onset cases. Oral contraceptives containing estrogen and progestin have been shown to reduce sebaceous gland activity, while anti-androgenic agents such as spironolactone can further suppress androgen-mediated sebum production. These therapies are often used in combination with topical or systemic treatments to optimize outcomes.

Overall, acne vulgaris management follows a severity-based, multimodal approach that integrates topical, systemic, and hormonal therapies. Topical treatments provide localized control of follicular hyperkeratinization and bacterial growth, while oral and hormonal agents address systemic inflammatory and endocrine contributors. Combination therapy remains central to achieving sustained clinical improvement and reducing the likelihood of treatment resistance.

Non-traditional modes of treatment

The use of herbal therapies in the management of acne vulgaris has increased substantially, largely due to their well-documented antibacterial and anti-inflammatory properties. Several botanical species are commonly employed for this purpose, including *Matricaria recutita* (chamomile), *Calendula officinalis* (calendula), and *Triticum aestivum* (wheat). Individuals prone to acne frequently apply botanical-based creams or aqueous infusions topically after cleansing the skin with soap and water or following thermal bathing practices. These herbal preparations contain a variety of bioactive compounds, including tannins and astringents, which contribute to their soothing, antimicrobial, and anti-inflammatory effects on the skin. In addition to topical applications, certain botanicals exert systemic effects that may influence acne development. *Vitex agnus-castus* has demonstrated efficacy in the management of premenstrual acne through its ability to modulate the dopaminergic system. Whole-fruit extracts of *Vitex* reduce prolactin secretion and regulate pituitary luteinizing hormone and follicle-stimulating hormone levels, resulting in increased progesterone and reduced estrogen levels. This hormonal modulation may help alleviate acne flares associated with the premenstrual phase.

The etiology of acne vulgaris is closely associated with the overgrowth of *Propionibacterium acnes* (currently classified as *Cutibacterium acnes*), a bacterium that plays a central role in the development of inflammatory acne lesions. This microorganism contributes to acne pathogenesis by promoting follicular inflammation, stimulating immune responses, and producing enzymes and metabolic

byproducts that disrupt the pilosebaceous unit. The resulting inflammatory cascade leads to the formation of papules, pustules, and nodular lesions characteristic of acne vulgaris. A growing body of research has demonstrated the antimicrobial and immunomodulatory potential of *Echinacea purpurea* extract against *P. acnes*. Bioactive compounds within *Echinacea*, including alkamides, caffeic acid derivatives, and polysaccharides, have been shown to inhibit bacterial proliferation while simultaneously modulating inflammatory signaling pathways. In addition to its direct antibacterial effects, *Echinacea purpurea* may attenuate excessive inflammatory responses by influencing cytokine production, thereby reducing tissue irritation and lesion severity. These combined antimicrobial and anti-inflammatory actions suggest that *Echinacea purpurea* extract may serve as a supportive or adjunctive therapeutic option in the management of acne vulgaris.

Serenoa repens, commonly known as saw palmetto, is a palm species native to the southeastern region of the United States. The botanical extract derived from its berries is widely recognized for its high phytosterol content, which has prompted extensive investigation into its anti-androgenic properties. These phytosterols are believed to influence androgen metabolism by inhibiting pathways involved in androgen activity. Due to these effects, saw palmetto has been incorporated into topical formulations aimed at managing acne and reducing excessive sebum production. Emerging evidence suggests that its ability to modulate androgen-driven sebaceous gland activity may contribute to its therapeutic potential in acne management.

Significant clinical improvement has been reported in individuals with mild to moderate acne following the topical application of formulations containing a 2% extract of green tea derived from *Camellia sinensis*. The observed benefits are largely attributed to the high concentration of bioactive polyphenols, including flavonoids and tannins, which possess potent antibacterial and anti-inflammatory properties. These compounds have been shown to inhibit the growth of *Cutibacterium acnes* while simultaneously modulating inflammatory signaling pathways within the pilosebaceous unit. In addition to its antimicrobial effects, green tea extract may contribute to acne improvement by reducing oxidative stress and supporting the regulation of sebum production. Collectively, these actions help limit follicular irritation, decrease lesion severity, and promote overall skin homeostasis, supporting the role of green tea extract as a complementary topical intervention in acne management.

Tea tree oil (TTO), derived from *Melaleuca alternifolia*, has been extensively studied for its dermatological benefits, particularly in the management of acne vulgaris. Research has demonstrated that TTO can mitigate epidermal irritation by modulating histamine-mediated inflammatory responses, thereby reducing redness, swelling, and discomfort associated with inflammatory acne lesions. In addition to its anti-inflammatory effects, tea tree oil exhibits broad-spectrum antibacterial activity, including efficacy against *Cutibacterium acnes*. Its antimicrobial action is primarily attributed to terpene compounds, such as terpinen-4-ol, which disrupt bacterial cell membranes and inhibit microbial proliferation. Due to these properties, tea tree oil has been incorporated into topical acne formulations as a natural alternative or adjunct to conventional treatments. Clinical observations suggest that topical solutions containing approximately 5% tea tree oil may effectively reduce acne lesion count and severity. In some treatment approaches, tea tree oil is combined with benzoyl peroxide to enhance antibacterial efficacy while potentially improving tolerability. This combination may offer synergistic benefits by targeting both microbial growth and inflammatory pathways involved in acne pathogenesis.

Vitamin C is a potent antioxidant that is widely used in topical dermatological formulations to address both acne and visible signs of skin aging. Its antioxidant properties help neutralize free radicals generated by environmental stressors such as ultraviolet radiation and pollution, thereby reducing oxidative damage to the skin. By limiting oxidative stress, vitamin C supports overall skin integrity and promotes a healthier epidermal environment. In addition to its antioxidant activity, vitamin C functions as an essential coenzyme in collagen synthesis, playing a critical role in maintaining skin structure, elasticity, and repair. It also helps regulate melanogenesis, thereby inhibiting the formation of abnormal pigmentation and supporting a more even skin tone. Clinical studies have demonstrated that topical application of vitamin C can improve acne lesions by reducing inflammation, supporting wound healing, and minimizing post-inflammatory hyperpigmentation, making it a valuable adjunct in acne management and skin rejuvenation protocols.

Zinc is an essential trace mineral that plays a critical role in skin health, immune function, and inflammatory regulation. Adequate zinc intake is particularly important given the established association between zinc deficiency and dermatological conditions such as

acrodermatitis enteropathica, a disorder characterized by severe inflammatory skin lesions. Beyond deficiency-related conditions, zinc has been widely used in the management of various skin disorders, including seborrhea and viral warts, and may be administered either topically or orally depending on clinical need. A growing body of evidence indicates that individuals with acne often exhibit significantly lower zinc levels compared to those with healthy skin (Eichenfield et al., 2021). This disparity suggests a potential contributory role of zinc deficiency in acne pathogenesis. Numerous clinical studies have demonstrated that both topical and oral zinc-based therapies can lead to meaningful improvements in acne severity by reducing inflammatory lesions, suppressing bacterial proliferation, and supporting skin barrier integrity. Zinc's therapeutic effects in acne management are believed to arise from multiple mechanisms. These include modulation of sebaceous gland activity, inhibition of inflammatory cytokine production, and interference with androgen metabolism through the partial inhibition of the conversion of testosterone to dihydrotestosterone (DHT). Collectively, these actions position zinc as a valuable adjunctive agent in the treatment of acne vulgaris, particularly in individuals with inflammatory or hormonally influenced presentations.

Omega-3 fatty acids have gained increasing attention for their potential role in acne management due to their influence on metabolic, inflammatory, and hormonal signaling pathways. One proposed mechanism involves the regulation of sterol regulatory element-binding proteins (SREBPs), which are key transcription factors that control lipid synthesis within sebaceous glands. SREBPs are activated in response to insulin-like growth factor-1 (IGF-1), a hormone known to stimulate sebaceous gland activity and sebum production. Acne is believed to develop, in part, from excessive sebum synthesis driven by SREBP activation, which promotes lipid accumulation within the pilosebaceous unit and triggers inflammatory responses. Elevated IGF-1 signaling enhances this process by increasing sebocyte proliferation and lipid output. Dietary patterns characterized by high glycemic index foods are thought to exacerbate acne by increasing blood glucose and insulin levels, thereby stimulating IGF-1 production and further activating SREBP-mediated sebaceous gland pathways. Omega-3 fatty acids may help counteract these effects by modulating IGF-1 signaling, reducing SREBP activation, and exerting anti-inflammatory actions through the production of specialized pro-resolving lipid mediators. Collectively, these mechanisms suggest that omega-3 fatty acids may support healthier sebum regulation, attenuate inflammatory responses, and reduce acne severity, particularly in individuals whose acne is influenced by diet-related metabolic signaling.

Linoleic acid plays a critical role in maintaining normal skin barrier function and sebaceous gland physiology. Studies have consistently shown that individuals who are prone to acne exhibit significantly lower concentrations of linoleic acid in their sebum compared to individuals with healthy skin. Linoleic acid serves as an essential precursor for the synthesis of specific ceramides, which are key structural lipids required for epidermal barrier integrity. Empirical research has further demonstrated that individuals with a genetic predisposition to acne often exhibit reduced ceramide levels within the stratum corneum. Importantly, the severity of ceramide deficiency has been shown to correlate directly with acne severity, suggesting a mechanistic link between lipid imbalance and lesion formation. Ceramide deficiency is associated with excessive keratin production within hair follicles, leading to follicular hyperkeratinization and impairment of the epidermal barrier (Pattinson et al., 2022). When the normal outflow of sebum is disrupted by hyperkeratinization and barrier dysfunction, comedones form as sebaceous glands become obstructed. Clinical investigations examining the direct topical administration of linoleic acid have demonstrated improvements in acne lesion progression, supporting its role in normalizing follicular keratinization and restoring barrier function. These findings provide empirical support for the use of linoleic acid as a potential alternative or adjunctive therapeutic approach in the management of acne vulgaris.

Nigella sativa, commonly known as black cumin, has been used for thousands of years in traditional medicine systems due to its well-documented antimicrobial and anti-inflammatory properties. Modern research has supported these historical applications, demonstrating that extracts of black cumin exhibit inhibitory activity against *Cutibacterium acnes,* the anaerobic bacterium that colonizes sebaceous glands and plays a central role in acne pathogenesis. *Cutibacterium acnes* (formerly *Propionibacterium acnes*) contributes to acne development by stimulating innate immune responses, promoting inflammatory cytokine release, and facilitating comedone formation within the pilosebaceous unit. Experimental studies evaluating black cumin seed extract have shown a capacity to suppress *C. acnes* growth, suggesting its potential as a complementary or alternative therapeutic option in acne management. Emerging evidence further indicates that the combined topical application of black cumin seed extract with conventional agents,

such as a 5% benzoyl peroxide formulation, may enhance treatment efficacy in mild to moderate acne. This synergistic approach may improve antimicrobial activity while supporting inflammation control, positioning black cumin as a promising adjunct in integrative acne treatment strategies.

Aloe vera has demonstrated notable effectiveness as a complementary agent when incorporated into conventional acne treatment regimens. Clinical evidence suggests that the combined use of aloe vera gel with topical retinoids, such as tretinoin cream, enhances therapeutic outcomes in individuals with mild to moderate acne. This combination has been shown to improve lesion clearance while potentially reducing treatment-related irritation commonly associated with retinoid use. Topical application of aloe vera may be beneficial for acne lesions on the face as well as other affected areas of the body. Aloe vera can be used as a standalone topical agent or in combination with other active compounds, depending on the severity of acne and individual skin tolerance. Its preventive and therapeutic effects are largely attributed to its antibacterial, anti-inflammatory, and antioxidant properties, which help suppress acne-associated bacteria, reduce inflammation, and support skin healing. In integrative and traditional skincare practices, aloe vera is frequently combined with other natural agents such as tea tree oil, cinnamon, honey, or lemon juice to enhance its antimicrobial and soothing effects. Collectively, these properties support the use of aloe vera as a versatile and effective adjunct in the management of acne vulgaris.

Honey and cinnamon are commonly used in traditional and home-based acne remedies due to their well-recognized antibacterial and anti-inflammatory properties. Their combined application has been widely suggested for supporting skin hygiene and managing acne-prone areas. When used together, these natural substances may help suppress the growth of acne-associated bacteria while simultaneously reducing local inflammation. A topical mask formulated from a blend of honey and cinnamon is frequently applied to facial regions affected by acne. Honey contributes humectant and antimicrobial effects that support wound healing and skin hydration, while cinnamon provides additional antibacterial activity that may help limit microbial proliferation. Together, these properties may aid in reducing acne lesion severity, supporting the resolution of acne-related scarring, and decreasing the likelihood of recurrent breakouts. As a result, honey and cinnamon continue to be utilized as complementary agents within integrative approaches to acne management.

Skullcap is a phytochemical-rich botanical derived from flowering plants within the *Scutellaria* genus and has been used for centuries in traditional Eastern medicine to address a wide range of conditions, including cardiovascular disorders, cancer, allergic responses, infections, and migraines. It is particularly well known for its calming effects on the nervous system and is often classified as a "nervine tonic." Nervine tonics are plant-derived bioactive compounds that support central nervous system function by promoting relaxation, stabilizing mood, and reducing anxiety (Pattinson et al., 2022). These properties are relevant to dermatological health, as psychological stress is a well-established contributor to inflammatory skin conditions, including acne vulgaris. In addition to its nervine effects, skullcap exhibits notable anti-inflammatory activity, which may help modulate inflammatory pathways involved in acne lesion development. Collectively, the stress-reducing and anti-inflammatory properties of skullcap suggest that it may serve as a supportive or alternative therapeutic option in the integrative management of acne, particularly in cases where stress and inflammation play a contributing role.

Non-Traditional Treatment and Global Treatment Suggestions for Various Skin Conditions - Vitiligo

A variety of skin conditions are managed worldwide using both conventional pharmaceutical therapies and alternative or complementary treatment approaches. Vitiligo, a chronic pigmentary disorder, has been extensively studied, leading to global clinical guidelines that emphasize individualized treatment strategies. These approaches are designed to address the autoimmune and inflammatory mechanisms underlying melanocyte loss, incorporating topical therapies, phototherapy, systemic agents, or a combination of modalities depending on disease severity and distribution.

Vitiligo: Global Treatment Guidelines

International guidelines for the management of vitiligo recommend treatment plans based on disease extent, lesion location, patient age, and response to prior therapy. Vitiligo treatment typically involves topical immunomodulatory agents, phototherapy, or combi-

nation therapies aimed at controlling inflammation and stimulating melanocyte regeneration or migration. The selection of therapy is guided by the degree of depigmentation, anatomical involvement, and the patient's overall health and lifestyle factors.

Topical Therapy for Vitiligo

Topical therapies are commonly used as first-line interventions for localized vitiligo. Among these, topical corticosteroids are widely regarded as the primary treatment modality due to their ability to suppress local immune activity and inhibit inflammation-mediated melanocyte destruction. Corticosteroids, which are synthetic analogs of hormones produced in the adrenal cortex, are applied directly to depigmented skin areas. Both moderate- and high-potency formulations, such as betamethasone valerate and clobetasol propionate, have demonstrated clinical efficacy. Treatment outcomes tend to be more favorable in sun-exposed areas, whereas acral regions often show reduced responsiveness (Xu et al., 2019). Daily use is generally recommended for up to three months, followed by intermittent application for an additional six months. If no clinical improvement is observed after three to four months, discontinuation is typically advised.

Immunomodulatory and Adjunctive Pharmacologic Therapies

Off-label use of topical calcineurin inhibitors represents an important alternative or adjunctive approach, particularly for sensitive areas such as the face and intertriginous regions. These agents act by inhibiting calcineurin, a pro-inflammatory protein involved in cytokine production, including interleukin-2 and tumor necrosis factor-alpha. By suppressing inflammatory signaling, calcineurin inhibitors promote melanocyte survival and melanoblast proliferation while reducing immune-mediated damage. Limited daily ultraviolet exposure is often recommended during treatment to enhance repigmentation. These agents may also be used in combination with intermittent topical corticosteroid regimens to maintain continuous treatment while minimizing steroid-associated adverse effects.

5-Fluorouracil (5-FU), traditionally used for premalignant and malignant skin lesions, has also been explored as a treatment option for vitiligo following observations of post-treatment hyperpigmentation. Proposed mechanisms include increased melanosome transfer to keratinocytes and stimulation of follicular melanocyte migration during epithelialization, supporting its role as an adjunctive repigmentation strategy in selected cases.

Phototherapy-Based Interventions

Phototherapy is a cornerstone of vitiligo management and involves controlled exposure to ultraviolet radiation to stimulate melanocyte activity. Narrowband ultraviolet B (NB-UVB) therapy is the most widely used modality and has demonstrated consistent efficacy in promoting melanocyte proliferation and repigmentation. Psoralen plus ultraviolet A (PUVA) therapy involves the administration of psoralen prior to UVA exposure and is generally reserved for more extensive or treatment-resistant vitiligo due to its broader melanocyte-stimulating effects. The excimer laser, which emits targeted UVB light, is particularly effective for treating small, localized depigmented patches by delivering focused therapy while sparing surrounding healthy skin.

Adjunctive and Cosmetic Management

Adjunctive therapies are frequently incorporated to enhance treatment outcomes. Calcipotriol, a synthetic vitamin D analog, has been shown to support repigmentation by influencing melanocyte differentiation and immune regulation and is typically used in combination with other treatments. Cosmetic camouflage products, such as Microskin and Dermablend, do not alter disease progression but provide aesthetic benefits by masking depigmented areas. For individuals with vitiligo affecting a substantial portion of the body, depigmentation therapy may be considered to achieve a more uniform skin tone through the reduction of remaining pigmentation.

Overall, vitiligo management follows an individualized, multimodal approach that integrates topical, immunomodulatory, and phototherapy-based interventions. Treatment selection must consider patient age, disease severity, lesion distribution, geographic location, and overall health status. Because therapeutic response varies widely, combination therapy is often necessary to optimize repigmentation outcomes. Continued advances in vitiligo research underscore the importance of remaining informed about emerging treatments

and evolving clinical guidelines.

Non-traditional medication
Herbal medication

Brosimum gaudichaudii Trécul, a local tree known as "mamacadela" or "inharé" and endemic to Brazil, has been used ethnopharmacologically to cure a variety of autoimmune skin disorders, notably vitiligo. Melanogenic effect is associated with psoralen (PSO), 5-methoxypsoralen 5-MOP or bergapten. Phytochemical tests have also revealed the presence of sterols and chalc. *Brosimum gaudichaudii Trécul* (EBGT) roots' bark extract has been utilized for photochemotherapy of vitiligo for a considerable period of time.

Ginkgo Biloba

Also referred to as the maidenhair tree in which both the leaves and seeds are used as medication. The extracts from the tree are formulated into tablets of different dosages which are then taken orally once, twice or three times a day for three months or more. The drug has both anti-inflammatory, antioxidant and immunomodulatory properties that are utilised in vitiligo management (Shakhbazova et al. 2021). Administration of the drug induces repigmentation of the affected skin when administered alone or in combination and is especially advantageous when administered with other global medications such as corticosteroids and alongside phototherapy. The theory behind the combinations is that the antioxidant properties of the drug enhances therapeutic effects of the other drugs. Ginkgo biloba is a sublingual supplement that is obtainable in tablet form. Some individuals with vitiligo may choose to consume ginkgo biloba orally in order to benefit from its anti-inflammatory and antioxidant properties. It is essential to keep in mind that the oral efficacy of ginkgo biloba in the treatment of vitiligo is still unknown, and that individual responses may vary considerably. In terms of topical application, ginkgo biloba extract is applied directly to the vitiligo-affected skin.

Cucumis melo (muskmelon)

Cucumis melo, commonly known as muskmelon, is a plant species belonging to the Cucurbitaceae family and has been increasingly studied for its therapeutic potential in dermatological applications. Extracts derived from *Cucumis melo* are rich in antioxidant compounds, most notably superoxide dismutase (SOD), an essential enzymatic defense against oxidative stress. Oxidative damage is a well-recognized contributor to melanocyte dysfunction and destruction in vitiligo, making antioxidant-based interventions particularly relevant. Recent clinical investigations have evaluated the efficacy of topical formulations containing SOD and catalase both derived from *Cucumis melo* in the treatment of vitiligo. These antioxidant enzymes work synergistically to neutralize reactive oxygen species, thereby protecting melanocytes from oxidative injury and supporting their functional recovery. In reported studies, treatment protocols typically began with the application of a gel formulation directly to vitiligo lesions. This was followed by exposure to narrowband ultraviolet B (nb-UVB) irradiation, administered either through controlled artificial phototherapy or natural sunlight exposure. The combination of antioxidant-rich *Cucumis melo* extract with nb-UVB therapy has demonstrated enhanced repigmentation outcomes compared to phototherapy alone. Additionally, formulations incorporating *Cucumis melo* extract alongside compounds such as phenylalanine and N-acetylcysteine have shown promising results, as these agents further support melanocyte metabolism and redox balance. Collectively, evidence suggests that the integration of Cucumis melo-derived antioxidants with targeted nb-UVB phototherapy represents a safe and effective complementary approach for improving repigmentation in individuals with vitiligo.

Khellin

Khellin is a naturally occurring furanochromone derived from the plant *Ammi visnaga*, which has been used since ancient Egyptian times as a traditional remedy for a variety of conditions, including renal disorders and asthma. In dermatological research, khellin has gained attention for its potential role in the treatment of vitiligo due to its ability to stimulate melanocyte proliferation and promote melanogenesis, despite the precise molecular mechanisms underlying these effects remaining incompletely understood. In recent decades, khellin has emerged as a safer alternative to psoralen-based therapies when used in combination with ultraviolet A (UVA) phototherapy. Unlike traditional PUVA therapy, khellin-based regimens appear to offer comparable repigmentation outcomes with a

reduced risk of phototoxicity. Khellin may be administered either topically or orally, depending on the treatment protocol. When administered orally, khellin is typically taken in gelatin capsule form, followed by UVA exposure approximately 2.5 hours post-ingestion. Treatment protocols generally involve two to three phototherapy sessions per week (Shakhbazova et al., 2021). Topical applications of khellin have also demonstrated promising results. Recent clinical studies have evaluated the use of a 4% khellin formulation applied directly to vitiligo lesions in combination with 308 nm monochromatic excimer light. Findings from these investigations suggest that this therapeutic combination is both safe and effective, with repigmentation rates comparable to established phototherapy modalities. Collectively, these data support khellin as a viable and well-tolerated adjunctive option in the integrative management of vitiligo.

Green tea polyphenols

Green tea polyphenols have garnered increasing attention for their potential role in the management of vitiligo due to their potent anti-inflammatory, antioxidant, and immunomodulatory properties. These biological effects are primarily attributed to *epigallocatechin-3-gallate* (EGCG), the most abundant and bioactive catechin found in green tea. EGCG has been shown to influence multiple cellular pathways involved in immune regulation and oxidative stress, both of which are central to the pathogenesis of vitiligo. Oxidative stress plays a critical role in melanocyte dysfunction and destruction, contributing to the depigmentation characteristic of vitiligo. EGCG exerts protective effects by scavenging reactive oxygen species and enhancing endogenous antioxidant defenses within the melanocyte microenvironment. By reducing oxidative damage, green tea polyphenols may help preserve melanocyte viability and support pigment production. In addition to its antioxidant activity, EGCG demonstrates immunomodulatory effects by regulating inflammatory cytokine production and attenuating immune-mediated melanocyte injury. Green tea polyphenols have shown therapeutic potential when used both topically and systemically, offering a dual approach to vitiligo management. Topical application may provide localized protection to affected skin, while internal supplementation may help modulate systemic inflammatory and oxidative pathways. Collectively, these mechanisms support the use of green tea polyphenols as a complementary strategy in integrative vitiligo therapy.

Curcumin

Curcumin is a bioactive polyphenolic compound derived from *Curcuma longa* (turmeric) and is widely recognized for its potent antioxidant, anti-inflammatory, antiproliferative, and antibacterial properties. These biological activities have generated increasing interest in curcumin as a supportive therapeutic agent in inflammatory and autoimmune skin disorders, including vitiligo. Oxidative stress and immune-mediated inflammation are key contributors to melanocyte dysfunction in vitiligo, making antioxidant-based interventions particularly relevant. In recent clinical studies, tetrahydrocurcuminoid (tetrahydrocurcumin) cream, a more stable and bioavailable metabolite of curcumin, has been evaluated in combination with narrowband ultraviolet B (nb-UVB) phototherapy for the treatment of vitiligo. In these treatment protocols, nb-UVB phototherapy was administered twice weekly over a twelve-week period. While patients receiving nb-UVB therapy alone demonstrated slightly higher repigmentation rates at the conclusion of the treatment phase, the addition of topical tetrahydrocurcuminoid was associated with improved antioxidant protection and tolerability (Qadir et al., 2022). Beyond topical use, oral curcumin may also offer benefit as an adjunctive therapy in vitiligo management. As a systemic antioxidant and immunomodulator, curcumin has the potential to reduce oxidative damage, modulate inflammatory cytokine activity, and support melanocyte survival. Similar to other antioxidant-based interventions, oral curcumin may enhance overall treatment outcomes when used alongside conventional therapies such as phototherapy, contributing to a more comprehensive and integrative approach to vitiligo care.

Polypodium leucotomos

Polypodium leucotomos, commonly referred to as Calaguala, is a tropical fern belonging to the Polypodiaceae family. Extracts derived from this plant are rich in polyphenols and possess well-documented antioxidant and photoprotective properties. Due to these effects, *Polypodium leucotomos* has been increasingly utilized in the management of various dermatological conditions, including vitiligo and psoriasis, particularly as an adjunct to phototherapy-based treatments. In recent years, *Polypodium leucotomos* has been incorporated into phototherapy regimens for patients with vitiligo to enhance treatment tolerability and support repigmentation. Its antioxidant

activity helps mitigate ultraviolet-induced oxidative stress, which is known to contribute to melanocyte damage. Clinical studies have explored its efficacy in combination with different phototherapeutic modalities. One notable investigation demonstrated that the combination of psoralen plus ultraviolet A (PUVA) therapy with oral *Polypodium leucotomos* supplementation resulted in greater degrees of repigmentation compared with photochemotherapy alone. Conversely, other studies have reported that oral *Polypodium leucotomos* used in conjunction with narrowband ultraviolet B (nb-UVB) phototherapy produced repigmentation outcomes comparable to nb-UVB therapy alone. These findings suggest that while *Polypodium leucotomos* may not consistently enhance repigmentation across all phototherapy modalities, its photoprotective and antioxidant properties may still offer clinical value by improving treatment safety, reducing oxidative stress, and supporting overall skin resilience in individuals undergoing vitiligo therapy.

Ayurvedic medicine; Picrorhiza Kurroa

Ayurvedic medicine has long employed botanical therapies in the management of pigmentary disorders, including vitiligo. One such botanical, *Picrorhiza kurroa*, has been investigated in recent clinical studies for its potential role as an adjunctive therapy in vitiligo treatment. In these studies, *Picrorhiza kurroa* was administered orally twice daily over a three-month period, alongside concurrent photochemotherapy using methoxsalen. Results indicated that the combined use of *Picrorhiza kurroa* and phototherapy produced improved repigmentation outcomes compared with phototherapy alone, suggesting a potential synergistic effect. In addition to *Picrorhiza kurroa*, Ayurvedic practice has also utilized concentrated topical preparations derived from plants of the Anacardiaceae family for vitiligo management. These botanical formulations are believed to function as photosensitizing agents, enhancing the skin's response to ultraviolet light and potentially stimulating melanocyte activity. While preliminary observations suggest therapeutic potential, the use of these topical agents remains limited by insufficient clinical data. Further controlled studies are necessary to better define their safety, efficacy, and role within integrative vitiligo treatment strategies.

Alpha-lipoic acid

Alpha-lipoic acid (ALA) is a naturally occurring antioxidant that has gained increasing attention for its potential role in the management of vitiligo. Oxidative stress is a key contributor to melanocyte damage and loss in vitiligo, and alpha-lipoic acid has been recommended as a supportive therapy due to its ability to neutralize free radicals and regenerate other endogenous antioxidants. By reducing oxidative injury within the melanocyte microenvironment, ALA may help preserve melanocyte viability and function.

Alpha-lipoic acid is commonly employed as an adjunctive treatment alongside conventional vitiligo therapies, including topical corticosteroids and phototherapy. Its antioxidant activity may enhance the effectiveness of these treatments by improving cellular resilience and supporting repigmentation processes. Recent clinical studies have demonstrated that supplementation with alpha-lipoic acid may accelerate cutaneous repigmentation in individuals with vitiligo, particularly when used in combination with established therapeutic modalities. These findings suggest that alpha-lipoic acid may serve as a valuable complementary agent within integrative vitiligo management strategies.

Flavonoids

Quercetin, a flavonoid that has been tested in vivo and in vitro as a potential therapy for pigmentary illness, has received special attention (Qadir et al. 2022). A variety of studies have shown quercetin's capacity to protect keratinocytes and melanocytes from oxidative stress, implying that it could be a useful oral adjuvant therapy for vitiliginous patients.

Tinea Dermatophyte Infection

Tinea, also known as dermatophyte infection, is a superficial fungal infection of the skin, hair, or nails caused by dermatophytes that thrive on keratinized tissue. Common clinical presentations include tinea corporis (body), tinea pedis (feet), tinea cruris (groin), and tinea capitis (scalp). Management strategies depend on the site, severity, and extent of infection and may involve topical or systemic antifungal agents. Global medical management of tinea infections includes a range of topical and oral antifungal medications designed to disrupt fungal cell integrity, inhibit fungal growth, and ultimately eradicate infection. The majority of antifungal agents target ergos-

terol, a critical structural component of fungal cell membranes, making it a central therapeutic target.

Topical Antifungal Therapies

Clotrimazole is one of the most commonly prescribed topical antifungal agents for superficial tinea infections. It exerts its fungicidal effect by inhibiting ergosterol synthesis, an essential lipid component of the fungal cell membrane. Disruption of ergosterol production compromises membrane stability, leading to increased permeability and eventual fungal cell death.

Miconazole is another widely used topical antifungal medication with a similar mechanism of action. By inhibiting ergosterol synthesis, miconazole disrupts fungal cell membrane integrity, impairing fungal growth and survival. Due to its broad-spectrum antifungal activity, miconazole is frequently utilized in the treatment of various dermatophyte infections.

Terbinafine, although available in both topical and oral formulations, is particularly effective as a topical agent for localized tinea infections. Terbinafine inhibits squalene epoxidase, an enzyme involved in ergosterol biosynthesis. This inhibition leads to toxic accumulation of squalene within fungal cells while simultaneously depleting ergosterol, resulting in fungal cell death.

Systemic (Oral) Antifungal Therapies

Oral antifungal therapy is indicated for extensive, recurrent, or treatment-resistant tinea infections, as well as infections involving hair or nails. Fluconazole is a commonly prescribed systemic antifungal agent that inhibits ergosterol synthesis, increasing fungal cell membrane permeability and leading to fungal death (Sharma & Gupta, 2022). In many uncomplicated tinea cases, a single oral dose or short treatment course has been shown to be highly effective.

Griseofulvin is a longstanding antifungal medication used particularly for tinea capitis and severe dermatophyte infections. Unlike azole antifungals, griseofulvin acts by disrupting fungal mitosis through interference with microtubule function, thereby inhibiting fungal cell division. Treatment with griseofulvin typically requires prolonged oral administration to ensure complete eradication of infection.

Itraconazole is another systemic antifungal agent frequently utilized for various forms of tinea. Similar to other azoles, itraconazole inhibits ergosterol biosynthesis, leading to compromised fungal cell membranes. Oral itraconazole is often recommended for more extensive or refractory infections and is valued for its broad antifungal spectrum.

The choice between topical and systemic antifungal therapy depends on infection severity, anatomical location, patient immune status, and prior treatment response. While topical agents are generally sufficient for mild, localized infections, oral antifungal medications are necessary for deeper, widespread, or persistent disease. Early and appropriate treatment is essential to prevent chronic infection, transmission, and recurrence.

Non-Traditional Treatment

Tea tree oil

Dermatophyte-caused tinea dermatophyte infections, also referred to as ringworm, are fungi that affect the epidermis. The putative antifungal properties of oil from tea tree, which is obtained from the *Melaleuca alternifolia* plant, have generated considerable interest. Globally, tinea infections are a prevalent dermatological condition that impacts individuals of all ages. While conventional antifungal medications continue to be the prevailing approach to treatment, alternative methods such as tea tree oil are gaining increasing attention. The antimicrobial properties of tea tree oil are widely recognized, specifically its capacity to treat dermatophytes through antifungal mechanisms (Kaushik et al., 2019). Terpinen-4-ol, one of the bioactive compounds present in tea tree oil, has demonstrated antifungal properties. These substances disrupt the integrity of fungal cell membranes, thereby influencing the growth and replication of fungi. In addition, the antimicrobial and anti-inflammatory properties of tea tree oil may enhance its effectiveness in the treatment of tinea infections. Implementation Approaches: In tinea treatment, the effectiveness and safety of tea tree oil are contingent on correct

application procedures. To prevent dermal irritation, it is recommended to dilute the oil with an appropriate carrier oil. To ascertain an individual's sensitivity, it is advisable to perform a patch test on a limited area. After being diluted, tea tree oil can be administered topically to the afflicted region using a cotton swab or ball. Consistent and frequent administration, typically once or twice daily, is essential for the attainment of therapeutic advantages.

Neem oil (Azadirachta indica)

Tinea infections, caused by dermatophyte fungi, affect millions of individuals worldwide and require accessible, effective, and well-tolerated treatment options. Neem oil, derived from the *Azadirachta indica* tree, has been extensively studied for its broad therapeutic potential and has long been utilized in traditional medicine systems for its antibacterial, antifungal, and anti-inflammatory properties. These characteristics make neem oil a promising complementary agent in the management of superficial fungal infections such as tinea. The antifungal activity of neem oil is primarily attributed to its rich profile of bioactive compounds, including nimbin, azadirachtin, and nimbidin. These constituents exert their effects by interfering with essential processes within the fungal cell membrane, leading to impaired membrane integrity, inhibition of fungal growth, and eventual cell death. In addition to its direct antifungal action, neem oil's antibacterial properties may help reduce secondary bacterial infections that can complicate tinea lesions, while its anti-inflammatory effects may alleviate associated symptoms such as redness, itching, and irritation. Neem oil is most commonly administered topically and is typically diluted with a carrier oil prior to application to reduce the risk of skin irritation. The diluted preparation is gently massaged onto the affected area to ensure adequate coverage and absorption. Consistent daily application is generally recommended to achieve optimal therapeutic outcomes. As with any topical botanical treatment, patch testing is advised prior to regular use to assess individual sensitivity and minimize the risk of adverse skin reactions. Collectively, these properties support the use of neem oil as a supportive, non-traditional option in the integrative management of tinea infections.

Garlic (Allium sativum)

Garlic (*Allium sativum*) is a widely recognized botanical known for its extensive therapeutic properties, including well-documented antibacterial and antifungal activities. Its medicinal value is largely attributed to sulfur-containing bioactive compounds such as allicin, ajoene, and various allyl sulfides, which are formed when garlic cloves are crushed or processed. These compounds exhibit potent antifungal effects by disrupting fungal cell membrane integrity and inhibiting essential enzymatic pathways involved in fungal growth and replication. In addition to its direct antifungal activity, garlic possesses anti-inflammatory and immune-modulating properties that may further support its therapeutic potential in the management of tinea infections (Kaushik et al., 2019). By reducing local inflammation and supporting host immune responses, garlic may help alleviate symptoms such as erythema, itching, and irritation while contributing to fungal clearance. These combined actions suggest that garlic may serve as a complementary, non-traditional option in the treatment of superficial dermatophyte infections. Topical application is the most common method for utilizing garlic in tinea management. This typically involves preparing a garlic paste or infused oil by crushing fresh garlic cloves and mixing them with a carrier oil to reduce skin irritation. The preparation is then applied directly to the affected area, ensuring adequate coverage of the involved skin. Prior to regular use, patch testing is strongly recommended to assess individual sensitivity, as garlic can cause irritation or contact dermatitis in some individuals. Application is generally limited to once or twice daily to minimize the risk of skin damage while maintaining therapeutic effectiveness.

Aloe vera

Aloe vera, derived from the plant *Aloe barbadensis*, has been used for centuries in traditional and integrative medicine for its soothing, protective, and therapeutic properties. It is particularly valued in dermatological applications due to its ability to calm irritated skin and support tissue repair. The medicinal effects of aloe vera are attributed to a diverse array of bioactive constituents, including salicylic acid, anthraquinones, and polysaccharides, each of which contributes to its anti-inflammatory, antimicrobial, and wound-healing actions. In the context of tinea infections, aloe vera may provide supportive benefits by reducing inflammation, alleviating itching and redness, and promoting skin barrier repair. Its antibacterial properties may help limit secondary bacterial colonization in com-

promised skin, while its wound-healing effects support recovery of damaged epidermal tissue. Although aloe vera is not a primary antifungal agent, its soothing and anti-inflammatory properties can help relieve symptoms associated with tinea and enhance overall skin comfort during treatment.

Aloe vera gel is obtained from the inner portion of the leaf and is applied topically to affected areas of the skin. Upon application, the gel delivers a cooling and moisturizing effect that may help soothe inflamed or irritated lesions. For best results, consistent application two to three times daily is generally recommended. As with other topical botanical treatments, a patch test should be performed prior to widespread use to assess individual sensitivity and reduce the risk of adverse reactions. When used alongside conventional or other non-traditional antifungal therapies, aloe vera may serve as a beneficial adjunct in the integrative management of tinea infections.

Probiotics

Probiotics are live microorganisms that confer health benefits to the host when administered in adequate amounts, with strains from the Lactobacillus and Bifidobacterium genera being among the most extensively studied. These beneficial microbes play an important role in supporting immune function and maintaining microbial balance within the body. Rather than acting as direct antifungal agents, probiotics influence host defenses indirectly by modulating immune responses and helping prevent microbial dysbiosis, thereby reducing susceptibility to fungal infections. The potential benefits of probiotics in enhancing epidermal resistance to infection are closely linked to their ability to support and preserve a balanced skin and gut microbiome. A stable microbiome contributes to the maintenance of the skin barrier, limits colonization by pathogenic organisms, and supports appropriate immune surveillance. Empirical studies have demonstrated that disruptions in microbial balance are associated with increased vulnerability to cutaneous infections, while restoration of microbiome equilibrium is beneficial for overall skin health. Probiotics may be administered either orally or topically, depending on the therapeutic goal. Oral probiotic supplementation can influence systemic immune regulation and gut-skin axis signaling, while topical probiotic formulations may help establish a microbiome-rich environment directly on the skin surface. Through these mechanisms, probiotics can support immune modulation, enhance barrier integrity, and promote a resilient microbial ecosystem, making them a valuable adjunctive strategy in the prevention and management of superficial fungal infections.

Oregano oil (Origanum vulgare)

Oregano oil, derived from the leaves of the botanical species *Origanum vulgare*, has attracted considerable attention for its potent antimicrobial properties, particularly its antibacterial and antifungal activity. The therapeutic effects of oregano oil are largely attributed to its high concentration of bioactive phenolic compounds, most notably carvacrol and thymol. These constituents have been extensively studied and shown to exhibit strong antifungal effects against a variety of pathogenic fungi. Carvacrol and thymol exert their antifungal activity primarily by disrupting fungal cell membrane integrity. This disruption leads to increased membrane permeability, leakage of intracellular contents, and impairment of essential metabolic and enzymatic processes required for fungal growth and replication. As a result, fungal viability is reduced and the progression of infection is slowed or halted. In addition to its direct antifungal action, oregano oil possesses anti-inflammatory and antioxidant properties that may help alleviate symptoms commonly associated with tinea infections, such as redness, irritation, and itching. For topical use, oregano oil should be diluted with a suitable carrier oil to reduce the risk of skin irritation or sensitization. The diluted preparation may be applied to the affected area using a cotton ball or swab to ensure targeted coverage. Consistent application, typically once or twice daily, has been associated with potential therapeutic benefits in the management of superficial fungal infections (Woo et al., 2019). As with other essential oil-based therapies, patch testing is strongly recommended prior to regular use to assess individual sensitivity and minimize the risk of adverse skin reactions.

Coconut oil

Coconut oil, derived from the fruit of the coconut palm (*Cocos nucifera*), has gained increasing attention for its potential antifungal properties and its role in supportive skin care. Its therapeutic activity is largely attributed to its high content of medium-chain saturated fatty acids, including caprylic acid, capric acid, and lauric acid. Among these, lauric acid has demonstrated the strongest antifungal activity, exerting its effects by disrupting fungal lipid membranes and compromising cell integrity. Preclinical studies, including animal

models, have shown that topical application of coconut oil can reduce fungal colonization and limit the progression of superficial fungal infections. These findings support its potential use as a non-traditional topical agent in the management of tinea infections. However, while clinical trials in humans remain limited, anecdotal reports and patient experiences suggest that coconut oil may provide symptomatic relief, particularly in reducing pruritus, erythema, and skin irritation associated with dermatophyte infections. Coconut oil is typically applied directly to affected areas of the skin, where it may also act as a natural emollient, supporting barrier repair and preventing excessive dryness. Its soothing and moisturizing properties may help create a less favorable environment for fungal growth while improving patient comfort. In clinical practice, coconut oil is often used as part of combination therapy, alongside conventional antifungal medications, to enhance tolerability and potentially support synergistic effects. Although further human studies are needed to fully establish its efficacy, coconut oil remains a widely used adjunctive option in integrative approaches to tinea management.

Hypochlorous acid

Hypochlorous acid (HOCl) is a naturally occurring antimicrobial compound produced by neutrophils as part of the innate immune response. It plays a critical role in host defense by rapidly neutralizing a wide range of pathogens, including bacteria, fungi, and viruses. Due to its broad-spectrum antimicrobial activity and favorable safety profile, hypochlorous acid has been increasingly utilized in dermatological and wound-care applications. In clinical settings, topical hypochlorous acid is commonly used for skin disinfection and infection prevention, particularly in the management of open wounds, burns, and compromised skin barriers. HOCl exerts its antimicrobial effects by disrupting microbial cell walls, denaturing proteins, and inactivating essential enzymes, leading to rapid pathogen elimination. Unlike many conventional antiseptics, hypochlorous acid is non-cytotoxic to human skin cells when used at appropriate concentrations, making it suitable for repeated use. In the context of superficial fungal infections, hypochlorous acid may serve as a supportive topical agent by reducing microbial load, limiting secondary bacterial colonization, and promoting a cleaner wound environment. Its anti-inflammatory properties may also help decrease redness and irritation associated with infected or inflamed skin. While hypochlorous acid is not a replacement for targeted antifungal therapy, its use as an adjunctive topical treatment may enhance overall skin hygiene, support healing, and reduce the risk of infection recurrence.

Potassium Iodide

Potassium iodide is an iodine-containing compound that has long been recognized for its antimicrobial properties, including antifungal activity. Iodine exerts its antifungal effects by penetrating fungal cells and disrupting essential protein structures and enzymatic systems, ultimately impairing fungal metabolism and viability. Due to these properties, potassium iodide has historically been used in the management of certain fungal and yeast-related infections. In dermatological applications, potassium iodide may be used topically to help reduce fungal burden on the skin and support infection control. Its antifungal activity may be particularly beneficial in limiting superficial yeast overgrowth and preventing secondary infection in compromised or inflamed skin. When applied correctly, potassium iodide can contribute to maintaining a cleaner cutaneous environment and supporting skin health. Topical application of potassium iodide can be incorporated into regular skincare or treatment routines; however, care must be taken to apply it precisely to the affected area to minimize irritation or discomfort. Because iodine-containing compounds can be irritating to sensitive skin and may be absorbed systemically with excessive use, cautious application and appropriate dilution are recommended. While potassium iodide is not typically considered a first-line antifungal therapy, it may serve as an adjunctive option within integrative treatment approaches when used judiciously and under appropriate guidance.

Zeolites and Silicas

Zeolites and silicas are naturally occurring mineral-based compounds widely recognized for their exceptional absorbent and adsorptive properties. In dermatological applications, these materials contribute to moisture regulation by absorbing excess sweat, sebum, and environmental moisture from the skin surface. Because dermatophyte fungi thrive in warm, moist environments, maintaining a dry cutaneous environment is a critical strategy in both the prevention and management of superficial fungal infections (Woo et al., 2019). In addition to moisture control, zeolites possess a unique porous crystalline structure that allows them to bind organic

compounds, toxins, and microorganisms. This adsorptive capacity may help reduce microbial load on the skin and limit the conditions that support fungal proliferation. Silicas similarly support skin health by enhancing dryness, improving texture, and supporting barrier function without disrupting normal skin physiology. Unlike pharmacologic antifungals, these minerals do not directly kill fungi but instead create unfavorable environmental conditions that inhibit fungal growth and persistence. Zeolites and silicas are commonly incorporated into anti-chafing powders, antifungal powders, barrier creams, and moisture-absorbing lotions designed for areas prone to fungal infection, such as the feet, groin, and skin folds. Their non-irritating nature and compatibility with other treatments make them suitable for long-term, adjunctive use. When used consistently, zeolite- and silica-containing formulations may help reduce recurrence rates by supporting dryness, skin comfort, and overall cutaneous hygiene as part of an integrative approach to fungal infection prevention.

Pityriasis Versicolor

Pityriasis versicolor (PV), also referred to as tinea versicolor, is a common superficial fungal infection caused by *Malassezia* species lipid-dependent yeasts that are part of the normal cutaneous microbiota. Under specific predisposing conditions, such as increased heat and humidity, excessive sweating, immunosuppression, hormonal changes, or disruption of the skin's microbial balance, these organisms can proliferate beyond normal levels. This overgrowth interferes with normal melanocyte function, resulting in the development of characteristic hypo- or hyperpigmented patches, most frequently observed on the trunk, neck, and upper extremities. Although pityriasis versicolor is generally benign and non-contagious, it often has a chronic or recurrent course. Effective management strategies are therefore directed not only at reducing fungal overgrowth but also at restoring and maintaining a balanced skin microbiome. Preventive measures and maintenance therapies are often required to minimize recurrence, particularly in individuals with ongoing environmental or physiological risk factors.

Topical Antifungal Therapies

Topical antifungal medications are widely regarded as the first-line treatment for pityriasis versicolor due to their effectiveness, safety, and ease of use. Commonly utilized agents include zinc pyrithione, ketoconazole, and terbinafine, all of which work by disrupting fungal cell membrane integrity or inhibiting fungal growth. These agents are effective in reducing *Malassezia* colonization and resolving visible lesions when applied consistently. Additional topical options include selenium sulfide, sulfur, and salicylic acid, which help suppress fungal proliferation while promoting exfoliation of affected skin. Antifungal agents from the imidazole class such as ketoconazole, econazole, and clotrimazole as well as allylamines and ciclopirox olamine, are also commonly prescribed. These therapies target ergosterol synthesis or other essential fungal cellular processes, leading to fungal cell death. Medicated shampoos, such as ketoconazole shampoo (e.g., Nizoral), are frequently used to cleanse affected areas of the body, including the trunk and shoulders. These shampoos are typically applied to damp skin, left in place for several minutes, and then rinsed off. They are particularly useful for widespread disease and for maintenance therapy to reduce recurrence.

Systemic Antifungal Therapy

In cases of severe, extensive, or treatment-resistant pityriasis versicolor, systemic antifungal therapy may be warranted. Oral antifungal agents such as itraconazole and fluconazole are commonly prescribed and have demonstrated efficacy in reducing fungal burden throughout the skin. These medications are particularly useful when topical treatments fail or when lesions are widespread and difficult to treat with localized therapy alone (Woo et al., 2019). Emerging research suggests that pramiconazole may represent a potential future alternative systemic therapy, although further clinical data are needed to establish its safety and efficacy. While systemic antifungals are effective, they are generally reserved for more severe cases due to the potential for systemic side effects and drug interactions.

Treatment Considerations and Recurrence Prevention

Although antifungal therapy is effective in eliminating the causative organism, repigmentation of affected skin may take weeks to

months following treatment, as normal melanocyte function gradually returns. Recurrence is common, particularly in individuals living in warm or humid climates or those with predisposing factors. As a result, maintenance therapy with periodic use of antifungal shampoos or topical agents is often recommended to prevent relapse. Overall, the management of pityriasis versicolor follows a step-wise approach, beginning with topical antifungals and progressing to systemic therapy when necessary. Consistent treatment adherence and preventive strategies are essential for achieving long-term disease control and minimizing recurrence.

Non-Traditional Treatment

Tea tree oil

A prospective natural treatment for Pityriasis versicolor, a skin condition characterized by a superficial fungal infection caused by the yeast *Malassezia* furfur, has been the investigation of tea tree oil. While research on the efficacy of tea tree oil in the treatment of pityriasis versicolor is limited, the oil's established antifungal and anti-inflammatory properties indicate that it may provide certain advantages. The Mold-Preventive Properties: Tea tree oil is composed of a diverse array of active constituents, with terpinen-4-ol being a crucial element responsible for facilitating its antifungal properties. It has been demonstrated that terpinen-4-ol inhibits fungal proliferation, specifically that of *Malassezia* species, which is responsible for pityriasis versicolor.

Topical application; Due to its high concentration, tea tree oil should be diluted prior to topical application. Prior to topical application, tea tree oil is customarily diluted with a carrier oil such as coconut or jojoba oil. A dilution of 5 to 10 percent is typically recommended. The impacted regions of the dermis may be treated topically with a tea tree oil solution that has been diluted. Potentially alleviating symptoms such as scaling and irritation, this agent impedes the growth of Malassezia.

Anti-inflammatory: Tea tree oil possesses anti-inflammatory properties that aid in the mitigation of inflammation, in addition to its antifungal attributes. This may facilitate the control of inflammatory reactions associated with pityriasis versicolor, thereby potentially contributing to symptom alleviation (Kaushik et al. 2019). In some cases, tea tree oil may be utilized in conjunction with conventional antifungal medications to provide a more comprehensive approach to managing illnesses.

Neem Oil

Neem oil, derived from the *Azadirachta indica* tree, contains several bioactive compounds with well-documented antifungal activity, most notably azadirachtin, nimbin, and nimbidin. These compounds have demonstrated the ability to inhibit fungal growth by disrupting essential cellular processes within fungal organisms. In the context of pityriasis versicolor, neem oil is of particular interest due to its inhibitory effects on *Malassezia* species, the lipid-dependent yeasts responsible for the condition. For topical use, neem oil must be diluted prior to application because of its high potency and potential to cause skin irritation when used undiluted. A concentration of approximately 5-10% neem oil combined with a carrier oil such as jojoba or coconut oil is commonly recommended. The diluted preparation is applied directly to affected areas of the epidermis, where it may help reduce fungal proliferation, scaling, and associated skin discoloration. Consistent application may contribute to improved symptom control and support restoration of normal skin appearance. In addition to its antifungal properties, neem oil exhibits significant anti-inflammatory activity, which may help mitigate inflammatory responses associated with pityriasis versicolor. By reducing localized redness, irritation, and discomfort, neem oil can improve overall skin tolerance during treatment. Furthermore, its antibacterial properties may offer additional benefit by helping prevent secondary bacterial infections that can occur when the skin barrier is compromised. Collectively, these properties support the use of neem oil as a complementary, non-traditional topical option in the integrative management of pityriasis versicolor.

Garlic

Garlic (*Allium sativum*) has long been recognized for its medicinal properties, particularly its antifungal, antibacterial, and immune-supportive effects. The primary compound responsible for garlic's antifungal activity is allicin, a sulfur-containing molecule released when garlic is crushed or minced. Allicin has demonstrated inhibitory effects against a range of fungal organisms, including *Malassezia* species, which are implicated in the development of pityriasis versicolor. By disrupting fungal cell membranes and inter-

fering with essential enzymatic processes, allicin limits fungal growth and proliferation. For topical application, garlic is commonly prepared as a paste by mincing or pulverizing fresh cloves. This paste may be applied directly to affected areas of the skin to target localized fungal overgrowth. However, due to garlic's strong bioactivity, topical use without dilution can result in skin irritation, burning sensations, or contact dermatitis. To reduce this risk, garlic paste is often mixed with a carrier oil prior to application. Individuals with sensitive skin should perform a patch test before broader use, and treatment should be discontinued immediately if redness, irritation, or discomfort occurs. In addition to topical use, garlic has been suggested to offer systemic benefits when consumed orally. Increasing dietary intake of garlic or using garlic supplements may help support immune function, which could indirectly enhance the body's ability to control fungal overgrowth. While dietary garlic alone is unlikely to resolve pityriasis versicolor, it may serve as a supportive measure within a broader treatment strategy. Garlic is most effective when used as part of a combination approach. When incorporated alongside conventional antifungal therapies prescribed by a healthcare provider, garlic may complement treatment by supporting antifungal activity and immune defense. This integrative use highlights garlic's potential role as an adjunctive, non-traditional option in the management of pityriasis versicolor rather than a replacement for standard medical therapy.

Apple Cider Vinegar

Apple cider vinegar (ACV) has been widely used in traditional and home-based skin care practices due to its acidic properties and antimicrobial potential. Its primary relevance in the management of pityriasis versicolor lies in its ability to alter the pH of the epidermis. *Malassezia* species, the lipid-dependent yeasts responsible for pityriasis versicolor, thrive in environments that favor neutral to slightly alkaline conditions. By lowering the skin's surface pH, apple cider vinegar may create an unfavorable environment for fungal growth and proliferation. In addition to its pH-modulating effects, apple cider vinegar contains organic acids, such as acetic acid, which exhibit mild antifungal and antibacterial activity. These properties may help reduce fungal load on the skin and limit secondary bacterial colonization in affected areas. By supporting restoration of the skin's natural acidic mantle, ACV may also contribute to improved barrier function and overall cutaneous health. For topical use, apple cider vinegar is typically diluted with water prior to application to minimize the risk of skin irritation or chemical burns. The diluted solution may be applied gently to affected areas using a cotton pad or cloth, allowing brief contact before rinsing if needed. While some individuals report symptomatic improvement with regular use, apple cider vinegar should be considered a complementary or supportive measure rather than a primary treatment. Patch testing is strongly recommended, and use should be discontinued if irritation, stinging, or worsening of symptoms occurs.

Aloe Vera

Aloe vera has demonstrated potential as a supportive topical therapy for alleviating pruritus, irritation, and discomfort commonly associated with skin disorders such as pityriasis versicolor. Its well-documented soothing and cooling properties make it particularly useful in calming inflamed or irritated skin. Aloe vera is also widely recognized for its emollient qualities, which help maintain skin hydration and support barrier repair when the epidermis has been compromised. When used in the context of pityriasis versicolor, aloe vera should be applied in moderation. A thin layer of aloe-based moisturizer may be gently applied to affected areas to relieve dryness and irritation; however, excessive application should be avoided. Overhydration of the skin can create a moist environment that favors fungal proliferation and may exacerbate disease severity (Kaushik et al., 2019). Proper balance between hydration and dryness is therefore essential. Research findings indicate that aloe vera contains anti-inflammatory compounds capable of reducing localized inflammation and soothing irritated skin. While pityriasis versicolor is fundamentally caused by a yeast overgrowth rather than an inflammatory condition alone, controlling secondary inflammation and irritation can improve patient comfort and support overall treatment outcomes. As such, aloe vera may serve as a complementary adjunct to antifungal therapies by addressing symptoms without directly targeting the underlying fungal infection.

Oregano oil

Oregano oil has been extensively studied for its antimicrobial properties and has demonstrated notable antifungal activity against a wide spectrum of pathogenic microorganisms, including the yeast species associated with pityriasis versicolor. The therapeutic effects

of oregano oil are primarily attributed to its bioactive constituents, particularly carvacrol and thymol, which are responsible for its strong antifungal potency. Current research indicates that these compounds exert their effects by disrupting the structural integrity of fungal cell membranes. This disruption increases membrane permeability, leading to leakage of essential intracellular components and impairment of critical metabolic processes necessary for fungal survival and replication. As a result, fungal proliferation is inhibited, and the progression of infection may be reduced. In addition to its direct antifungal action, oregano oil also possesses anti-inflammatory and antioxidant properties that may help alleviate symptoms such as irritation, redness, and scaling commonly associated with pityriasis versicolor. When used topically, oregano oil should be appropriately diluted with a carrier oil to minimize the risk of skin irritation. While oregano oil may serve as a supportive, non-traditional option in managing pityriasis versicolor, it is best utilized as an adjunct to conventional antifungal therapies rather than as a replacement.

Probiotics

Probiotics play an important role in maintaining a healthy microbial balance on the skin and may offer supportive benefits in the management of pityriasis versicolor. A balanced skin microbiome helps limit the overgrowth of pathogenic organisms, including *Malassezia* species, the yeast responsible for this condition. Rather than exerting direct antifungal effects, probiotics influence microbial competition and immune regulation, thereby creating an environment that is less favorable for fungal proliferation. Topical probiotic formulations, such as creams or lotions containing live or lysate-based probiotic strains, may assist in restoring and maintaining skin microbial equilibrium. By reinforcing the skin's natural defense mechanisms, these products may help improve barrier function and resilience. In some home-based practices, live probiotic yogurt masks are applied to affected areas with the intention of introducing beneficial bacteria to the skin surface. While anecdotal reports suggest symptomatic improvement, clinical evidence supporting this practice remains limited, and such methods should be approached with caution. Oral probiotic supplementation represents another potential supportive strategy. Although probiotics are most commonly associated with gut health, the gut-skin axis highlights the interconnected relationship between intestinal microbiota, immune modulation, and skin health. Probiotic strains such as Lactobacillus and Bifidobacterium, which are frequently included in dietary supplements, have been associated with improved immune regulation and may indirectly support resistance to cutaneous fungal overgrowth. Probiotics are best utilized as part of a complementary approach rather than as a standalone treatment. When used alongside conventional antifungal therapies prescribed by a healthcare provider, probiotics may enhance overall treatment outcomes by supporting microbial balance, immune function, and skin barrier integrity. This integrative strategy may be particularly valuable in reducing recurrence and promoting long-term skin health in individuals prone to pityriasis versicolor.

Hypochlorous Acid

The antibacterial effect of hypochlorous acid is broad-spectrum, encompassing a wide range of microorganisms, and it also has antifungal properties. The capacity to selectively target a diverse array of microorganisms, including the yeast Malassezia, which has been associated with the occurrence of pityriasis versicolor, is seen. Utilization of Topical Hypochlorous Acid Solutions: Diverse concentrations of hypochlorous acid can be used in topical formulations. The administration of these treatments commonly occurs through direct application to the affected parts of the skin. Sprays and Cleansers: Hypochlorous acid is included in sprays and cleansers that can be topically administered to assist in the control of microbial proliferation on the skin. Anti-Inflammatory Effects: Modulation of Inflammation: Hypochlorous acid has demonstrated anti-inflammatory characteristics, potentially offering therapeutic benefits in the management of inflammatory responses linked to dermatological conditions such as pityriasis versicolor. Complementary Approach: Employed in conjunction with other therapeutic interventions. It is advisable to employ hypochlorous acid in combination with other therapeutic approaches, rather than relying solely on its independent use. To enhance the comprehensiveness of the management approach, it may be advisable to supplement it with conventional antifungal medications administered under the guidance of a healthcare professional.

Vitamin C

The antioxidant capabilities of vitamin C contribute to the mitigation of oxidative stress, which is responsible for the aging of the skin, by safeguarding it against the detrimental impact of free radicals. While antioxidants may not possess direct antifungal properties, it is crucial to underscore the need of maintaining skin health and integrity in order to enhance overall immune function. The recognition of the importance of vitamin C in the process of collagen production is crucial when considering its role in wound healing and maintaining the integrity of the skin. Collagen, an essential protein, plays a pivotal role in maintaining the structural integrity of the skin. The process of wound healing and maintenance of healthy skin are contingent upon the sufficient production of collagen.

Vitamin C is widely recognized for its capacity to bolster the immune system through the augmentation of immunological responses. While lacking direct antifungal qualities, a strong immune system can contribute to the host's defense against several ailments, including those caused by fungal pathogens. The use of skincare products to the skin with the intention of achieving a brightening effect. The use of topical preparations incorporating vitamin C is extensively acknowledged for its capacity to enhance skin luminosity. The potential influence of vitamin C in enhancing a consistent skin tone is suggested in the context of dermatological conditions marked by changes in pigmentation, such as pityriasis versicolor. There exists empirical evidence suggesting that the application of topical vitamin C products may enhance the process of collagen formation and so enhance the overall health of the skin. In the management of pityriasis versicolor, the utilization of vitamin C is recommended as a supplementary approach rather than as the exclusive therapeutic intervention. It can be administered along with traditional antifungal medications as directed by a healthcare professional.

Tinea Capitis

Tinea capitis is a fungal infection of the scalp caused by dermatophytes and requires systemic antifungal therapy for effective eradication. Because the infection involves hair shafts and follicles, topical treatments alone are insufficient. Global treatment guidelines emphasize oral antifungal medications as the cornerstone of therapy, often supported by antifungal shampoos to reduce surface fungal burden and limit transmission.

Systemic Antifungal Therapy

Griseofulvin has long been a first-line treatment for tinea capitis and remains widely used, particularly in pediatric populations. This antifungal agent inhibits fungal cell division by disrupting microtubule function, thereby preventing dermatophyte proliferation. Griseofulvin is administered orally, with dosing based on body weight, and treatment duration typically ranges from six to twelve weeks. It has demonstrated particular effectiveness against Microsporum species, which are common causative organisms in certain geographic regions. Absorption of griseofulvin is enhanced when taken with a high-fat meal, improving therapeutic outcomes.

Terbinafine is another highly effective systemic antifungal agent used in the treatment of tinea capitis. It exerts fungicidal activity by inhibiting the enzyme squalene epoxidase, leading to toxic accumulation of squalene within fungal cells and disruption of cell membrane synthesis. Standard treatment protocols involve once-daily oral administration for a duration of four to six weeks (Woo et al., 2019). Pediatric-friendly tablet formulations are readily available, making terbinafine a practical option for children.

Itraconazole is a broad-spectrum antifungal medication that works by inhibiting lanosterol 14-demethylase, an enzyme essential for fungal cell membrane production. By disrupting ergosterol synthesis, itraconazole compromises fungal cell integrity and viability. This medication is available in both liquid and capsule formulations, and treatment duration varies depending on clinical severity and organism sensitivity.

Fluconazole is another systemic antifungal option used in tinea capitis management. Similar to itraconazole, fluconazole inhibits lanosterol 14-demethylase, leading to damage of fungal cell membranes. It is administered orally and is often noted for its relatively rapid onset of action compared with other antifungal agents. Treatment duration is determined by clinical response and organism susceptibility.

Adjunctive Topical Therapies

Although systemic therapy is required for cure, adjunctive topical treatments play an important supportive role. Medicated shampoos containing ketoconazole or selenium sulfide are commonly used to reduce fungal load on the scalp and minimize spread to others. These shampoos are applied to the scalp, left in place for a specified period, and then rinsed off. While they do not eliminate the infection on their own, they enhance treatment effectiveness and reduce contagiousness. In cases of severe inflammation or intense symptomatic reactions, short courses of systemic corticosteroids may be prescribed. These agents help reduce inflammation, relieve discomfort, and prevent complications such as scarring or permanent hair loss when significant inflammatory responses are present. Treatment Considerations The choice of antifungal therapy depends on patient age, causative organism, disease severity, geographic prevalence of dermatophyte species, and treatment tolerability. Early diagnosis and adherence to the full course of therapy are essential to achieve complete eradication, prevent recurrence, and limit transmission to close contacts.

Non-Traditional Treatment

Tea tree oil

Tinea capitis is a fungal infection that affects the hair follicles and scalp. The alleged antifungal qualities of tea tree oil, which is extracted from the *Melaleuca alternifolia* plant, have garnered the attention of numerous studies. Tinea infections are a prevalent dermatological condition that has a global impact on individuals across all age groups. Although conventional antifungal medications continue to be widely utilized for therapy, alternative methods like tea tree oil are increasingly being embraced. The antimicrobial properties of tea tree oil are widely recognized, specifically its efficacy in treating tinea infections through its antifungal mechanisms. Terpinen-4-ol, an active constituent included in tea tree oil, exhibits antifungal properties. These chemical agents compromise the structural integrity of fungal cell membranes, hence exerting a detrimental impact on fungal proliferation and reproduction (Alkeswani et al. 2019). In addition, the antibacterial and anti-inflammatory properties of tea tree oil may enhance its effectiveness in the management of tinea infections. The strategies for executing a plan: The efficacy and safety of tea tree oil in the treatment of tinea are contingent upon the use of appropriate application protocols (Kaushik et al. 2019. To mitigate the risk of skin irritation, it is advisable to dilute the oil by including a compatible carrier oil. It is advisable to do a patch test on a limited region in order to ascertain an individual's sensitivity. When tea tree oil is appropriately diluted, it can be administered topically to the afflicted region using a cotton swab or ball. To achieve therapeutic results, it is necessary to adhere to a regular and frequent dosing regimen, typically involving administration once or twice daily.

Neem oil

Tinea infections, which are transmitted by dermatophytes and affect millions of people globally, necessitate readily available cures that are effective. Neem oil, derived from the *Azadirachta indica* tree, has been the subject of extensive scientific investigation due to its purported therapeutic properties, which encompass antibacterial and antifungal attributes. Approach Methods: The antifungal properties of neem oil are attributed to its bioactive constituents, namely nimbin, azadirachtin, and nimbidin. These substances inhibit the growth of fungi by disrupting essential processes within the fungal cell membrane. In addition, neem oil contains antibacterial and anti-inflammatory properties that make it potentially effective in the treatment of tinea infections. Methods of Administration: Prior to applying neem oil directly to the affected area, it is customary to dilute it with a carrier oil. One may attain a comprehensive covering of the affected area by incorporating the oil into the epidermis via rubbing. Consistent medication adherence, ideally daily, is crucial for optimizing therapeutic outcomes (Leung et al., 2020). Prior to applying any topical treatment, it is recommended to conduct patch testing in order to identify any potential individual sensitivities.

Garlic

Garlic, scientifically referred to as *Allium sativum*, is a widely acknowledged botanical species renowned for its therapeutic attributes, encompassing antibacterial and antifungal properties. Allicin, ajoene, and allyl sulfides are bioactive compounds that contribute to the medicinal value of garlic. Antifungal effects are produced by these compounds through the disruption of fungal cell membrane

integrity and the inhibition of vital enzymatic activity that is implicated in growth and replication. In addition, the anti-inflammatory and immune-modulating properties of garlic may contribute to its potential therapeutic efficacy for tinea. Implementation Approaches; Widespread use of garlic to treat tinea involves the preparation of a garlic paste or oil. Crushed garlic cloves, when combined with a carrier oil, possess the capability to function as a topical remedy for the impacted region. Before proceeding with widespread application, it is necessary to conduct an individual susceptibility patch test. Utilize the paste or oil no more than once or twice daily, so as to ensure that the affected epidermis is uniformly covered.

Aloe vera

Aloe vera, from the miller plant *Aloe barbadensis*, has long been used in traditional medicine for its soothing and therapeutic characteristics. The bioactive components of aloe vera salicylic acid, anthraquinones, and polysaccharides make it medicinal. Aloe vera's anti-inflammatory, wound-healing, and antibacterial characteristics may help treat tinea. This chemical may treat tinea infection symptoms by reducing skin irritation. Application Methods: The interior leaf yields aloe vera gel, which is administered externally. Applying this chemical to the skin cools and moisturizes. Consistently administering the drug twice or thrice daily may yield therapeutic results. A patch test should be done before delivering the chemical in substantial amounts to establish susceptibility.

Probiotics

It has been demonstrated that live probiotics, specifically strains of Lactobacillus and Bifidobacterium, are advantageous to the host organism. Probiotics indirectly affect the immune system and microbial equilibrium, thereby decreasing the risk of fungal infections. The potential advantages of probiotics in enhancing the resistance of the epidermis to infections may be associated with their ability to preserve a balanced microbiome. Empirical studies have demonstrated that maintaining a balanced microbiome is advantageous for enhancing the health of the epidermis. Probiotics, whether administered topically or orally, possess the capacity to regulate the immune response and promote the development of a microbiome-rich environment on the skin.

Oregano oil

The antibacterial properties of oregano oil, obtained from the leaf of the *Origanum vulgare* botanical species, have gotten a lot of attention. Carvacrol and thymol, two bioactive components found in oregano oil, have been shown to have substantial antifungal activity. The aforementioned compounds cause membrane rupture within fungal cells, limiting and slowing the fungus's normal physiological activities and growth. The anti-inflammatory and antioxidant properties of oregano oil support its potential efficacy in treating tinea infections. It is best to dilute oregano oil with a carrier oil before applying it topically (Leung et al. 2020). The application of the diluted oil to the afflicted area may be helped by the use of a cotton ball or swab. Consistent treatment, usually twice a day, has been shown to offer potential therapeutic advantages. Prior to general implementation, a patch test should be performed to assess individual susceptibility.

Coconut Oil

Coconut oil is rich in saturated fats, particularly lauric acid. The antibacterial properties exhibited by lauric acid indicate its potential utility in combating fungal infections, including those responsible for tinea capitis. The antifungal mechanisms of coconut oil: Lauric acid induces cell death by disruption of the fungal cell membrane. Caprylic and capric acid, which are classified as medium-chain fatty acids, are believed to possess antifungal properties and play a role in enhancing the overall effectiveness of coconut oil.

Dietary modifications

Dietary modifications may serve as a supportive strategy in the management of inflammatory and skin-related conditions by promoting systemic immune balance and reducing inflammatory burden. Emphasis is often placed on the inclusion of anti-inflammatory foods, such as a wide variety of vegetables and fruits, which provide essential vitamins, minerals, and antioxidants that support skin health and immune function. Foods rich in omega-3 fatty acids, including fatty fish and plant-based sources, are particularly valued

for their ability to modulate inflammatory pathways. In addition to dietary sources, omega-3 fatty acid supplements may be used to further support anti-inflammatory effects and overall skin resilience. Complementary topical remedies, such as aloe vera gel, are frequently incorporated to soothe irritated skin and support barrier repair. Herbal remedies, including chamomile, are also commonly used for their calming, anti-inflammatory, and skin-soothing properties. Together, these dietary and lifestyle modifications may enhance overall treatment outcomes when used alongside conventional medical therapies.

Hypochlorous acid

Hypochlorous acid (HOCl) is a naturally occurring antimicrobial compound produced by the body's immune cells as part of the innate defense system. It possesses broad-spectrum antibacterial and antifungal activity, demonstrating effectiveness against a wide range of pathogenic microorganisms. Because of its rapid antimicrobial action and favorable safety profile, hypochlorous acid has been increasingly utilized in dermatological care. Topical hypochlorous acid is commonly applied to the skin to prevent infection, particularly in wound management and general skin disinfection. It exerts its effects by disrupting microbial cell walls, denaturing proteins, and inactivating essential enzymes, leading to rapid pathogen neutralization. Unlike many traditional antiseptics, hypochlorous acid is non-irritating and non-toxic to human skin cells when used at appropriate concentrations, making it suitable for repeated use. In clinical and supportive skin care settings, hypochlorous acid may help reduce microbial load, support healing, and maintain a clean cutaneous environment as part of an integrative infection prevention strategy.

Potassium Iodide

Potassium iodide is an iodine-containing compound that has long been recognized for its antimicrobial properties, including antifungal activity. Iodine exerts its antifungal effects by penetrating fungal cells and disrupting essential proteins and enzymatic processes required for fungal metabolism and survival. Through these mechanisms, potassium iodide may help limit yeast proliferation and support infection control in certain cutaneous conditions. Topical application of potassium iodide can be incorporated into regular skincare or treatment routines when used judiciously. When applied precisely to affected areas, it may help reduce fungal burden while supporting skin hygiene. Due to the potential for skin irritation and systemic absorption with excessive use, care should be taken to apply potassium iodide sparingly and only to the intended area. Patch testing prior to regular use is recommended, and potassium iodide is best utilized as an adjunctive option alongside conventional antifungal therapies rather than as a standalone treatment.

Zeolites and Silicas

Zeolites and silicas are mineral-based compounds widely used in dermatological and skincare applications for their exceptional absorbent properties. These materials help regulate moisture on the skin by absorbing excess sweat, sebum, and environmental humidity. Because fungal organisms thrive in warm, moist environments, maintaining a dry skin surface is an important strategy in the prevention and management of superficial fungal infections. Beyond moisture control, zeolites possess a unique porous structure that allows them to adsorb organic compounds and microbial byproducts, potentially reducing conditions that support fungal proliferation. Silicas similarly contribute to skin comfort by improving texture and supporting barrier function without disrupting normal skin physiology. These components are commonly incorporated into anti-chafing powders, antifungal powders, and moisture-absorbing lotions, particularly for areas prone to moisture accumulation. When used consistently, zeolite- and silica-containing products may help reduce fungal recurrence and support long-term skin hygiene as part of an integrative fungal prevention approach.

Psoriasis

Psoriasis is a chronic, immune-mediated inflammatory skin disorder characterized by dysregulated immune signaling that leads to excessive keratinocyte proliferation, impaired epidermal differentiation, and disruption of the skin barrier. These pathological changes result in the formation of well-demarcated, erythematous plaques with overlying silvery scale. In addition to cutaneous manifestations, psoriasis is increasingly recognized as a systemic inflammatory condition associated with comorbidities such as psoriatic arthritis, cardiovascular disease, metabolic syndrome, and depression. Global treatment strategies for psoriasis are aimed at modu-

lating immune activity, reducing inflammation, normalizing skin cell turnover, and alleviating symptoms such as pruritus, scaling, and discomfort. Therapeutic approaches are also designed to improve overall quality of life and minimize disease recurrence. Treatment selection is individualized and guided by multiple factors, including disease severity, extent and location of skin involvement, patient age, comorbid health conditions, and prior treatment response. Because psoriasis follows a relapsing and remitting course, long-term management often requires ongoing assessment and adjustment of therapy to maintain disease control and reduce systemic inflammatory burden.

Topical Therapies

Topical treatments remain the foundation of care for mild to moderate psoriasis. Corticosteroids, available in a range of potencies and formulations, are widely used for their anti-inflammatory, antipruritic, and immunosuppressive effects. When applied topically, they reduce erythema, scaling, and itching by suppressing inflammatory cytokine activity within psoriatic plaques. Long-term use, however, requires careful monitoring due to potential side effects such as skin atrophy.

Calcipotriene, a synthetic vitamin D analog, is frequently used either alone or in combination with topical corticosteroids. It works by regulating keratinocyte differentiation and reducing excessive skin cell proliferation, thereby minimizing plaque thickness and scaling. Tazarotene, a topical retinoid, further supports normalization of epidermal cell turnover and is often used in plaque psoriasis to improve lesion appearance and texture.

Systemic Non-Biologic Therapies

For moderate to severe psoriasis or cases unresponsive to topical therapy, systemic medications are often required. Methotrexate is a commonly prescribed immunosuppressive agent that reduces keratinocyte proliferation and dampens immune activity. It may be administered orally or by injection and is effective across a range of psoriasis severities. Careful monitoring is required due to potential hepatic and hematologic adverse effects.

Cyclosporine is another potent immunosuppressive medication that provides rapid symptom relief by inhibiting T-cell activation. Because of its potential nephrotoxic and hypertensive effects, cyclosporine is typically reserved for short-term use in severe or refractory psoriasis (Daniyal et al., 2019). Acitretin, an oral retinoid, is particularly useful in severe or pustular psoriasis and is often combined with other therapies to enhance efficacy, though it is contraindicated in pregnancy.

Biologic Therapies

Biologic agents have transformed the management of moderate to severe psoriasis by targeting specific components of the immune cascade. Tumor necrosis factor-alpha (TNF-α) inhibitors, including adalimumab, etanercept, and infliximab, suppress a key inflammatory cytokine involved in psoriatic plaque formation. These agents are effective in reducing both cutaneous symptoms and associated systemic inflammation.

Interleukin-17 (IL-17) inhibitors, such as secukinumab, ixekizumab, and brodalumab, block IL-17A, a central mediator in keratinocyte activation and inflammatory amplification. These therapies have demonstrated high rates of skin clearance and rapid clinical response. Interleukin-23 (IL-23) inhibitors, including ustekinumab, further target upstream immune signaling pathways and are widely used in moderate to severe psoriasis (Daniyal et al., 2019).

Targeted Oral Therapies

Apremilast is an orally administered small-molecule therapy that inhibits phosphodiesterase-4 (PDE-4), leading to reduced production of pro-inflammatory cytokines. It offers a systemic treatment option with a more favorable safety profile compared to traditional immunosuppressants, making it suitable for patients who are not candidates for biologic therapies.

Treatment Considerations

Psoriasis management often requires a personalized, stepwise approach that integrates topical agents, systemic medications, and biologic therapies as needed. Combination therapy is frequently employed to maximize efficacy while minimizing adverse effects. Because psoriasis is a chronic condition with systemic implications, long-term disease monitoring and adjustment of therapy are essential to achieve sustained control and improved patient outcomes.

Non-Traditional Medication

Phototherapy

Individuals with severe plaque psoriasis may benefit from participating in an experiment involving this drug. A substantial body of clinical evidence supports the use of phototherapy, often known as light therapy, in the treatment of psoriasis. Phototherapy is a controlled and therapeutic procedure that involves the application of ultraviolet (UV) light to the epidermis in order to produce therapeutic results. Phototherapy, a light-based alternative therapeutic strategy for psoriasis, includes a variety of techniques, each with its own set of benefits. The primary causes contributing to these advantages include pain relief, the halting of abnormal skin cell proliferation, and the prevention of inflammation. The following ideas serve as the core pillars of psoriasis phototherapy: A variety of phototherapy approaches are currently being used in the field of medicine. UVB phototherapy has been established as a feasible therapeutic approach for the treatment of a wide range of skin problems. The use of ultraviolet B (UVB) radiation involves the suppression of damaged skin cell proliferation due to its ability to penetrate the epidermal layer. UVB phototherapy is administered using a light box or light panel in a clinical context. The medical procedure known as PUVA therapy involves the combination of psoralen and ultraviolet A radiation. Psoralen plus ultraviolet A (PUVA) is a photosensitizing medication composed of psoralen and UVA radiation. The fundamental mechanism of action is provided by the combination of these two substances. Following administration of a psoralen solution, whether orally or topically, patients are exposed to UVA light in an initial clinical environment.

Dietary Modifications

Omega-3 fatty acids, found in walnuts, fish, flaxseeds, and chia seeds, may offer prospective advantages to individuals suffering from psoriasis on account of their anti-inflammatory characteristics. Ginger and turmeric are two seasonings that possess anti-inflammatory properties. The potential advantages of incorporating these substances into culinary preparations or consuming them as infusions are both viable options. The antioxidant content found in a wide range of fruits and vegetables in various hues aids in the maintenance of skin health. Berry, carrot, spinach, and kale consumption is nutritionally beneficial. It is imperative that individuals diagnosed with psoriasis give precedence to the maintenance of a nutritious diet and the attainment of an ideal body weight. The maintenance of optimal body weight is affected by the proportion of whole grains, lean proteins, and healthful fats in one's diet. Some individuals who have psoriasis may find that particular diets, such as those high in processed foods, red meat, and dairy products, worsen their symptoms. Keeping a food journal could potentially serve as a beneficial method for detecting potential allergenic substances. Psoriasis patients may additionally manifest gluten sensitivity or celiac disease, which may necessitate the implementation of dietary adjustments that exclude gluten.

Vitamin C

Vitamin C has antioxidant and immune-supportive properties which may be advantageous in the management of psoriasis. Vitamin C possesses antioxidant and anti-inflammatory properties due to its capacity to eliminate free radicals, which are molecules responsible for oxidative stress and inflammation within the body. It is also necessary for the synthesis of collagen, an essential component in preserving the elasticity and vitality of the epidermis. Assistance for the Immune System The significance of vitamin C in regulating the immune system cannot be overstated. Given its autoimmune nature, psoriasis warrants the consideration of immune system modulation as a potential therapeutic approach for symptom management. Vitamin C is essential for the regeneration and healing of tissues and wounds. The healing of skin injury induced by psoriasis lesions may be aided by vitamin C. sources include; Citrus fruits,

including but not limited to citrus and oranges, strawberries, blueberries, and raspberries, Kiwi, Spinach and Broccoli. Although consuming a balanced diet is the most effective method to obtain nutrients, insufficient dietary intake may necessitate the use of vitamin C supplements.

Turmeric

Curcumin, the primary bioactive constituent found in turmeric, has garnered recognition for its immunomodulatory, anti-inflammatory, and antioxidant characteristics. Curcumin has the capacity to modulate immunological responses, inhibit pro-inflammatory cytokines, and attenuate inflammatory pathways, which may lead to a favorable outcome in the treatment of psoriasis (Alkhatib et al. 2021). Curcumin has the potential to inhibit other signaling pathways that are believed to contribute to the pathogenesis of psoriasis.

Aloe vera

Aloe Vera's anti-inflammatory qualities may provide therapeutic benefits to patients suffering from psoriasis. This results in enhanced skin moisture. The presence of desquamating, xerotic skin tissue characterizes psoriasis. Irritation and itching might arise due to the existence of dry skin. However, the moisturizing characteristics of aloe vera have been reported to potentially ease these symptoms. Aloe vera has been widely used throughout history for its therapeutic capabilities in the treatment of wounds and its capacity to promote skin tissue regeneration. In the case of psoriasis, this phenomenon has the ability to accelerate wound healing on the skin. The gel formed from the aloe vera plant has natural cooling characteristics, which may provide relief to people with sensitive skin. Topically applied pure aloe vera gel has been proven to have potential advantages for psoriasis lesions. Use topical products with aloe vera as the major ingredient, such as ointments, lotions, or moisturizers designed specifically for people with psoriasis or sensitive skin (Gaikwad et al. 2022). Warm baths containing aloe vera gel or the use of aloe vera bath products are quite helpful in delivering relief and comfort to the skin. Bathing in aloe vera-infused water has the ability to generate a mood of tranquillity.

Evening primrose oil

Evening primrose oil is derived from the seeds of *Oenothera biennis* and is a rich natural source of ***gamma-linolenic acid (GLA)***, an omega-6 fatty acid with well-documented anti-inflammatory properties. In the context of psoriasis, GLA has attracted attention due to its role in modulating inflammatory pathways that are dysregulated in this chronic immune-mediated condition. GLA functions as a metabolic precursor to prostaglandin E1 (PGE1), an anti-inflammatory eicosanoid that helps regulate immune responses and counterbalance pro-inflammatory mediators. PGE1 has been shown to influence cytokine production, improve microcirculation, and support normal epidermal function. Because psoriasis is characterized by persistent inflammation, immune activation, and abnormal keratinocyte proliferation, the anti-inflammatory effects of GLA are particularly relevant in disease management. By supporting the production of anti-inflammatory mediators, evening primrose oil may help restore a healthier balance between pro-inflammatory and anti-inflammatory signaling pathways involved in psoriasis pathogenesis. This rebalancing effect may contribute to reduced erythema, scaling, and discomfort associated with psoriatic lesions. While evening primrose oil is not a standalone treatment for psoriasis, its incorporation as an adjunctive dietary supplement may complement conventional therapies and support overall inflammatory control as part of an integrative management approach.

Oregon grape

Oregon grape (*Mahonia aquifolium*), sometimes referred to as barberry, is a species within the *Mahonia* genus that has attracted increasing interest for its potential therapeutic applications in inflammatory skin disorders, including psoriasis. Traditionally used in herbal medicine, Oregon grape has been valued for its antimicrobial and anti-inflammatory properties, which are largely attributed to its primary bioactive compound, berberine. Berberine has demonstrated a broad range of biological activities, including antibacterial, anti-inflammatory, and immunomodulatory effects. In the context of psoriasis, berberine is believed to influence several inflammatory pathways involved in disease pathogenesis, such as cytokine signaling and keratinocyte proliferation. By modulating these pathways, berberine may help reduce inflammation, normalize excessive skin cell turnover, and improve the appearance of psoriatic plaques. Al-

though clinical studies evaluating the efficacy of Oregon grape in psoriasis are limited, available evidence suggests potential therapeutic benefit, particularly when used topically or as part of an integrative treatment approach. Early investigations and anecdotal reports indicate improvements in plaque thickness, redness, and scaling. While further large-scale, controlled studies are needed to establish standardized dosing and long-term safety, Oregon grape remains a promising botanical adjunct in the management of psoriasis due to its ability to target inflammatory mechanisms underlying the condition.

Neem oil

The neem tree (*Azadirachta indica*), which is indigenous to India, is a perennial plant that has been extensively employed in Ayurvedic medicine for thousands of years. The anti-inflammatory characteristics of neem oil, specifically its constituents nimbidin and nimbin, may contribute to the reduction of inflammation and associated symptoms in individuals with psoriasis. The inherent antibacterial properties of neem oil have been recognized for their potential benefits in preventing or managing secondary bacterial or fungal infections that may occur in persons with psoriasis due to reduced skin barrier function. Given that dry, brittle skin is a commonly seen sign of psoriasis, the use of moisturizing treatments becomes essential. Due to its substantial concentration of fatty acids and vitamin E, neem oil exhibits notable efficacy as a moisturizing agent for the skin. The antioxidant properties of neem oil are responsible for its ability to provide protection against oxidative stress (Gaikwad et al. 2022. There is a prevailing belief that the occurrence or worsening of psoriasis can be attributed to the presence of oxidative stress.

Atopic dermatitis

Atopic dermatitis (AD), commonly referred to as eczema, is a chronic, relapsing inflammatory skin condition characterized by impaired skin barrier function, immune dysregulation, and recurrent episodes of intense pruritus and inflammation. These abnormalities contribute to increased transepidermal water loss, heightened sensitivity to environmental triggers, and susceptibility to secondary infections. The condition often begins in childhood but may persist or recur throughout adulthood, significantly impacting physical comfort, sleep quality, and overall psychosocial well-being. Global treatment strategies for atopic dermatitis are centered on reducing cutaneous inflammation, alleviating itching, restoring and maintaining the skin barrier, preventing disease flares, and improving quality of life. Therapeutic selection is highly individualized and depends on multiple factors, including disease severity, patient age, anatomical distribution of lesions, comorbid conditions, and response to previous therapies. Because atopic dermatitis follows a fluctuating course, long-term management typically involves a combination of pharmacologic treatments and consistent supportive skin care to achieve sustained disease control.

Topical Anti-Inflammatory Therapies

Topical corticosteroids remain a cornerstone of atopic dermatitis management due to their potent anti-inflammatory effects. When applied directly to affected areas of the skin, they reduce erythema, swelling, and itching by suppressing inflammatory immune responses. Corticosteroids are available in a range of potencies and formulations, allowing treatment to be tailored to disease severity and anatomical location. Because prolonged use may lead to adverse effects such as skin thinning and barrier disruption, topical corticosteroids are typically used intermittently and under medical supervision.

Topical calcineurin inhibitors, including tacrolimus (Protopic) and pimecrolimus (Elidel), provide an alternative to corticosteroids, particularly for sensitive areas such as the face, neck, and skin folds. These agents modulate immune activity by inhibiting calcineurin-dependent inflammatory pathways, thereby reducing cytokine release without causing skin atrophy. They are often recommended for long-term maintenance therapy or in patients who cannot tolerate topical steroids.

Non-Steroidal Topical Agents

Crisaborole (Eucrisa), a topical phosphodiesterase-4 (PDE-4) inhibitor, represents a non-steroidal anti-inflammatory option for mild to moderate atopic dermatitis. By inhibiting PDE-4, crisaborole reduces the production of pro-inflammatory cytokines within the skin.

It is applied directly to affected areas and is generally well tolerated, making it suitable for both pediatric and adult patients.

Systemic Symptom Management

Oral antihistamines, such as loratadine, cetirizine, and diphenhydramine, are frequently used to alleviate pruritus associated with atopic dermatitis. Non-sedating antihistamines are commonly preferred for daytime use, while sedating agents may be prescribed at night to improve sleep quality in patients experiencing severe nocturnal itching. In cases of severe acute flares, short courses of systemic corticosteroids may be administered to rapidly suppress inflammation. However, long-term use is generally avoided due to the risk of significant adverse effects, including immunosuppression, metabolic disturbances, and rebound flares.

Systemic Immunomodulatory Therapies

For moderate to severe atopic dermatitis that is refractory to topical therapy, systemic immunomodulating agents may be considered. Cyclosporine, an immunosuppressive medication, inhibits T-cell activation and reduces inflammatory signaling. Due to potential nephrotoxicity and other systemic side effects, its use is reserved for severe cases and requires close medical monitoring (Mandlik & Mandlik, 2022). Other systemic agents, such as methotrexate, may also be utilized in select patients to control chronic inflammation.

Biologic and Phototherapy Options

Biologic therapies have significantly advanced the treatment of moderate to severe atopic dermatitis. Dupilumab (Dupixent) is a monoclonal antibody that targets key immune pathways involved in AD by inhibiting interleukin-4 and interleukin-13 signaling. Administered via injection, dupilumab has demonstrated substantial efficacy in reducing disease severity, pruritus, and flare frequency. Phototherapy, including ultraviolet (UV) light therapy, may also be employed in select cases to reduce inflammation and modulate immune responses in the skin. This modality is often used when topical therapies are insufficient or contraindicated.

Supportive Skin Care and Maintenance

Regardless of disease severity, supportive skin care remains a fundamental component of atopic dermatitis management and long-term disease control. Consistent use of emollients and moisturizers helps restore and strengthen the compromised skin barrier, reduce transepidermal water loss, and improve overall skin hydration. By reinforcing barrier integrity, these interventions decrease skin sensitivity to environmental irritants and allergens, thereby minimizing the frequency and severity of disease flares. Supportive skin care measures are most effective when integrated with pharmacologic therapies, such as topical anti-inflammatory agents or systemic treatments, to enhance therapeutic outcomes. Routine moisturizing, gentle cleansing practices, and avoidance of known triggers collectively support skin homeostasis and patient comfort. When maintained consistently, these foundational strategies play a critical role in sustaining remission, reducing treatment reliance, and improving quality of life for individuals with atopic dermatitis.

Non-Traditional Treatment

Coconut oil

The potential therapeutic properties of natural coconut oil in management of atopic dermatitis has garnered attention, leading to curiosity over its impact on different skin types. The moisturizing qualities of coconut oil are generally acknowledged in academic circles. Lauric acid, along with other fatty acid constituents, exhibits the ability to mitigate moisture loss by serving as a surrogate for the skin's inherent protective barrier. It is imperative for those afflicted with atopic dermatitis to maintain proper hydration of their skin as a means of averting dehydration and irritation (Yan et al. 2020). Coconut oil possesses potential anti-inflammatory qualities, making it a promising ingredient for the alleviation of cutaneous inflammation. Inflammation is closely linked to the facilitation of both the onset and progression of atopic dermatitis. Coconut oil exhibits antifungal and antibacterial effects as a result of its significant concentration of lauric acid. One potential benefit is the prevention of recurrent fungal or bacterial infections in weakened epidermal tissue. There are assertions suggesting that coconut oil may offer a certain degree of alleviation for skin that is experiencing irritation. Potential mitigation of discomfort and irritation commonly seen in individuals with atopic dermatitis.

Evening Primrose Oil

Evening primrose oil (EPO) is derived from the crushed and pressed seeds of *Oenothera biennis* and is a rich dietary source of gamma-linolenic acid (GLA), an essential omega-6 fatty acid with well-documented anti-inflammatory properties. GLA plays an important role in immune modulation and has been studied for its potential benefits in inflammatory skin conditions, including atopic dermatitis. In individuals with atopic dermatitis, deficiencies or impaired metabolism of essential fatty acids have been associated with increased inflammation and compromised skin barrier integrity. GLA serves as a precursor to anti-inflammatory eicosanoids, which may help counterbalance pro-inflammatory immune activity involved in atopic dermatitis. By influencing these inflammatory pathways, evening primrose oil may help reduce erythema, pruritus, and skin irritation.

In addition to its immunomodulatory effects, GLA and other essential fatty acids contribute to the maintenance and repair of the epidermal barrier. Patients with atopic dermatitis typically exhibit a weakened skin barrier, leading to increased transepidermal water loss and heightened susceptibility to environmental irritants and allergens. Supplementation with evening primrose oil may help reinforce barrier structure, improve lipid composition of the stratum corneum, and enhance overall skin resilience. When applied topically or used systemically, evening primrose oil also provides emollient benefits by moisturizing the skin and improving hydration. These moisturizing effects may further support barrier repair and reduce flare frequency when used as part of a comprehensive atopic dermatitis management strategy. Although evening primrose oil is not a replacement for conventional therapies, it may serve as a valuable adjunctive option in integrative approaches to long-term skin care and inflammation control.

Aloe Vera

Due to its tranquil and hydrating characteristics, Aloe vera has been utilized to treat a variety of skin conditions, including atopic dermatitis. A gel-like substance found in the leaves of the aloe vera plant is commonly refined into aloe vera oil. Aloe vera oil has moisturizing components thus application to dehydrated skin can help alleviate redness and restore moisture. This emollient property is crucial for individuals with atopic dermatitis, as maintaining hydrated skin is a critical component of the condition's management. Aloe vera, which contains anti-inflammatory compounds, might be able to assist in reducing the inflammation that is linked to atopic dermatitis (Yan et al. 2020). Mitigating inflammation may contribute to the alleviation of symptoms including pruritus and erythema. Aloe vera has been widely utilized for wound treatment due to its well-established therapeutic properties. Applying this substance to patients diagnosed with atopic dermatitis may potentially enhance the rate of recovery. This is particularly advantageous in cases where there is injury to the skin barrier.

Tea Tree Oil

Tea tree oil (TTO), derived from Melaleuca alternifolia, is a botanical extract widely recognized for its antibacterial, antifungal, antiviral, and anti-inflammatory properties. Its antimicrobial activity is primarily attributed to bioactive terpene compounds, particularly terpinen-4-ol, which have demonstrated effectiveness against a broad spectrum of microorganisms. These properties are especially relevant in atopic dermatitis, where compromised skin barrier function increases susceptibility to secondary bacterial and fungal infections, such as Staphylococcus aureus colonization. In cases where atopic dermatitis lesions are prone to infection, tea tree oil may offer supportive benefits by helping limit microbial overgrowth on the skin surface. By reducing microbial burden, tea tree oil may contribute to improved lesion healing and decreased risk of infection-related flares. However, it is important to emphasize that tea tree oil should be considered a complementary measure rather than a primary antimicrobial therapy.

Beyond its antimicrobial effects, several studies suggest that tea tree oil exhibits anti-inflammatory activity, which may help mitigate inflammatory responses associated with atopic dermatitis. By modulating inflammatory mediators, tea tree oil may reduce redness, swelling, and discomfort in affected areas. These effects could contribute to symptomatic relief when used appropriately. Due to its potency, tea tree oil should always be diluted with a carrier oil prior to topical application to minimize the risk of skin irritation or allergic contact dermatitis, which individuals with atopic dermatitis may be particularly prone to developing. Patch testing is strongly recommended before use. When used cautiously and in conjunction with standard medical therapies and supportive skin care, tea tree

oil may serve as a beneficial adjunct in integrative atopic dermatitis management strategies.

Vitamin C

Vitamin C (ascorbic acid) is a potent antioxidant that plays a critical role in maintaining skin health and supporting epidermal integrity. One of its primary functions is its involvement in collagen synthesis, as vitamin C acts as an essential cofactor for enzymes responsible for stabilizing and cross-linking collagen fibers. Collagen is a fundamental structural protein within the skin, and a healthy collagen matrix is vital for maintaining the strength, elasticity, and barrier function of the epidermis an area of particular concern in atopic dermatitis. In addition to its role in collagen production, vitamin C provides significant antioxidant protection by neutralizing free radicals generated through environmental exposures, inflammation, and immune activity. Oxidative stress has been implicated in the pathogenesis of atopic dermatitis, where excessive free radical activity can exacerbate inflammation, impair barrier repair, and contribute to ongoing skin damage. By mitigating oxidative stress, vitamin C may help reduce inflammatory burden and protect skin cells from further injury. Vitamin C also plays an important role in wound healing and tissue repair. It supports fibroblast function, promotes re-epithelialization, and enhances the skin's ability to recover from micro-injuries caused by scratching and chronic inflammation. When used topically or obtained through adequate dietary intake, vitamin C may support barrier restoration, improve skin resilience, and contribute to improved healing outcomes. While vitamin C is not a primary treatment for atopic dermatitis, it serves as a valuable supportive nutrient within a comprehensive skin care and inflammation management strategy.

Calendula (Calendula officinalis)

Calendula officinalis is a medicinal plant widely recognized for its anti-inflammatory, antibacterial, and wound-healing properties, making it a valuable botanical in dermatologic care. Its therapeutic activity is attributed to a variety of bioactive compounds, including flavonoids, triterpenoids, and essential oils, which work together to reduce inflammation and support tissue repair. In the context of atopic dermatitis, calendula may help alleviate cutaneous inflammation, reduce redness, and soothe irritated skin. Its antibacterial properties are particularly beneficial in preventing or limiting secondary infections, which are common in individuals with compromised skin barriers. Additionally, calendula has been shown to promote wound healing by stimulating collagen production and supporting re-epithelialization, which can aid in the repair of skin damaged by chronic scratching and inflammation. Calendula is available in a wide range of topical formulations, including oils, creams, ointments, and moisturizers. Topical emollients containing calendula are commonly used as supportive therapies in atopic dermatitis management due to their soothing and skin-protective effects. When applied regularly, these products may help maintain skin hydration, reinforce barrier integrity, and improve overall skin comfort. While calendula is not a replacement for conventional medical treatments, it may serve as a beneficial adjunct within an integrative approach to managing atopic dermatitis.

Chamomile

Chamomile, derived from *Matricaria chamomilla*, is a well-established medicinal herb recognized for its anti-inflammatory, anxiolytic, and mild sedative properties. Its therapeutic effects are attributed to bioactive compounds such as apigenin, bisabolol, and chamazulene, which have been shown to modulate inflammatory pathways and calm irritated tissues. These properties make chamomile particularly useful in conditions characterized by chronic inflammation and discomfort, including atopic dermatitis. In dermatologic applications, chamomile may help reduce skin irritation, erythema, and pruritus by suppressing inflammatory mediators and soothing inflamed skin. Its calming effects may also indirectly benefit individuals with atopic dermatitis by promoting relaxation and improved sleep, which is often disrupted by persistent itching. Chamomile tea is commonly consumed for its systemic anti-inflammatory and calming effects, while topical formulations such as lotions, creams, or ointments are applied directly to affected areas to provide localized relief. Chamomile essential oil may also be used topically when properly diluted with a carrier oil to minimize the risk of skin irritation or allergic reactions. When applied appropriately, chamomile-containing products may support skin barrier repair, enhance comfort, and reduce inflammation. While chamomile is not a primary treatment for atopic dermatitis, it may serve as a beneficial adjunctive therapy within an integrative approach to skin care and inflammation management.

Milk Thistle

Milk thistle (*Silybum marianum*) is a medicinal plant widely recognized for its anti-inflammatory and antioxidantproperties, largely attributed to its active flavonolignan complex known as silymarin. Traditionally, milk thistle has been used as a supportive agent for liver health, where it helps protect hepatocytes from oxidative stress and inflammatory damage. Given the liver's role in detoxification and immune regulation, milk thistle's systemic effects may indirectly influence skin health. In the context of atopic dermatitis, the potential benefits of milk thistle are primarily linked to its ability to modulate inflammatory pathways and reduce oxidative stress. Chronic inflammation and immune dysregulation are central features of atopic dermatitis, and antioxidants such as silymarin may help mitigate the inflammatory burden that contributes to skin barrier dysfunction and persistent flares. By supporting overall immune balance and reducing systemic inflammation, milk thistle may offer complementary support in managing inflammatory skin conditions. Milk thistle is most commonly administered orally in supplement form, making it easily accessible for individuals seeking integrative support. While topical application of milk thistle is less common, some skincare formulations incorporate silymarin for its antioxidant and anti-inflammatory properties, potentially aiding in the management of irritated or inflamed skin. Although milk thistle is not a primary treatment for atopic dermatitis, it may serve as a supportive adjunct within a comprehensive, integrative approach aimed at reducing inflammation and supporting overall skin health (Yan et al., 2020).

Hamamelis bark

Hamamelis virginiana the witch hazel can be used in managing atopic dermatitis. Tannins, specifically hamamelitannins and proanthocyanidins, are the major constituents of hamamelis bark. These tannins have been shown in laboratory experiments to have a strong inhibitory effect on the activity of 5-lipoxygenase as well as the formation of leukotriene B4. Furthermore, proanthocyanidins have been shown to particularly restrict the synthesis of platelet activating factor (PAF). In a croton oil oedema test on mice, a topical treatment of a hydro-ethanolic extract produced from hamamelis bark displayed anti-inflammatory effects. The majority of the observed impact was attributable to proanthocyanidins with a molecular weight of 3 kDa or larger, which resulted in a 69% inhibition. In contrast, hamamelitannins produced a 7% inhibition. Notably, proanthocyanidins with a smaller molecular weight, notably less than 3 kDa, had no effect.

Melanoma

Melanoma is an aggressive and potentially life-threatening form of skin cancer that originates from melanocytes, the pigment-producing cells of the epidermis. Due to its high potential for rapid growth and metastatic spread, melanoma requires early detection and prompt, stage-appropriate medical intervention. If left untreated, melanoma can invade deeper layers of the skin and disseminate to regional lymph nodes and distant organs, significantly worsening prognosis. Global treatment strategies for melanoma are carefully guided by a range of clinicopathologic factors, including tumor thickness (Breslow depth), the presence or absence of ulceration, lymph node involvement, and evidence of distant metastasis. Additional considerations such as tumor location, patient age, overall health status, and molecular characteristics may also influence treatment decisions. As a result, management often follows a personalized, risk-adapted approach. Treatment of melanoma typically involves a multidisciplinary care team that may include dermatologists, surgical oncologists, medical oncologists, radiation oncologists, and pathologists. Therapeutic modalities may include surgical excision for localized disease, radiation therapy for local control or symptom palliation, and systemic treatments such as immunotherapy or targeted agents for advanced-stage disease. Adjunctive therapies are frequently incorporated to reduce recurrence risk and improve long-term outcomes, reflecting the complex and evolving nature of melanoma management.

Surgical Management

Surgery remains the cornerstone of treatment for melanoma and is considered the standard of care for localized disease as well as the primary intervention for many cases of regional melanoma. The goal of surgical treatment is complete removal of the tumor along with an appropriate margin of healthy tissue to minimize the risk of local recurrence. In some patients with advanced melanoma, sur-

gery may also be considered to reduce tumor burden or alleviate symptoms. Melanomas that cannot be safely or completely removed are classified as unresectable. Common surgical approaches include wide local excision, sentinel lymph node biopsy, and lymph node dissection. These techniques are selected based on tumor characteristics and staging.

Wide Local Excision

Wide local excision is the primary surgical treatment for melanoma and involves removal of the tumor along with surrounding normal tissue. The width of the surgical margin is determined by the thickness of the melanoma. For melanomas less than or equal to 1.0 mm in thickness, a margin of approximately 1 cm is typically recommended. For tumors greater than 2.0 mm in thickness, margins of up to 2 cm are generally advised, reflecting the increased risk of local spread (Cullen et al., 2020). When melanoma is diagnosed in situ (stage 0), surgical excision with a 5 mm margin of surrounding skin is usually sufficient. In some cases, depending on the anatomical location and size of the excision, reconstructive techniques such as skin flaps or skin grafts may be required. Skin flaps involve repositioning nearby tissue to cover the surgical site, while skin grafts involve transferring skin from another area of the body.

Lymphatic Mapping and Sentinel Lymph Node Biopsy

Sentinel lymph node biopsy is often performed concurrently with wide excision in patients with tumors of sufficient thickness or additional high-risk features. Sentinel lymph node biopsy is a staging procedure used to determine whether melanoma has spread to regional lymph nodes. During this procedure, a radioactive tracer and/or dye is injected near the tumor site to identify the first lymph nodes (sentinel nodes) most likely to receive metastatic cells. These nodes are surgically removed and examined for the presence of melanoma.

If no cancer cells are detected in the sentinel lymph nodes, additional lymph node surgery is generally unnecessary. However, if melanoma is identified within these nodes, this indicates disease progression and may prompt consideration of further lymph node dissection or additional systemic therapy. Sentinel lymph node biopsy is typically recommended for melanomas with a thickness greater than 0.8 mm or for thinner tumors that exhibit ulceration or other high-risk features. It is not routinely advised for non-ulcerated melanomas less than 0.8 mm thick due to the low likelihood of nodal involvement.

Radiation Therapy

Radiation therapy utilizes high-energy x-rays or particles to destroy cancer cells and is commonly delivered through external-beam radiation therapy. While melanoma is generally less sensitive to radiation than some other cancers, radiation therapy plays an important role in specific clinical scenarios. Postoperative (adjuvant) radiation therapy may be used to reduce the risk of local recurrence, particularly in cases with lymph node involvement or incomplete surgical margins. Radiation therapy is also frequently used for palliative purposes in metastatic melanoma to relieve symptoms such as bone pain, neurological symptoms, or brain metastases. Techniques such as whole-brain radiation therapy may be employed when the central nervous system is involved. Advanced technologies, including linear accelerators, Gamma Knife, CyberKnife, and TomoTherapy, allow for precise targeting of tumors while minimizing damage to surrounding healthy tissue.

Immunotherapy

Immunotherapy has significantly transformed the treatment landscape for melanoma, particularly for stage II, III, and IV disease. These therapies harness the body's immune system to recognize and destroy cancer cells more effectively. Immune checkpoint inhibitors targeting programmed cell death pathways, such as PD-1 inhibitors (nivolumab and pembrolizumab) and PD-L1 inhibitors (atezolizumab), are widely used. CTLA-4 inhibitors, such as ipilimumab, may also be administered alone or in combination with other immunotherapies to enhance immune activation. These agents have demonstrated substantial improvements in survival outcomes and durable disease control in many patients with advanced melanoma.

Additional and Adjunctive Treatment Modalities

Other medically accepted treatment options may be utilized in selected cases based on tumor location, stage, and patient-specific factors. These include adjuvant high-dose interferon therapy, isolated limb perfusion chemotherapy for localized extremity disease, Mohs micrographic surgery for select superficial melanomas, and local destructive techniques such as curettage and electrodesiccation or cryotherapy. Topical treatments, including imiquimod cream and 5-fluorouracil cream, may be considered for specific superficial lesions or in patients who are not surgical candidates. Photodynamic therapy has also been explored in limited settings, though its role in melanoma remains adjunctive rather than primary.

Non-Traditional Treatments and Herbal Medication

Mistletoe Extracts

Mistletoe extracts have been widely studied in integrative oncology, particularly in Europe, where standardized preparations such as Iscador are used as adjuncts to conventional cancer therapy. These extracts contain bioactive compounds including mistletoe lectins, viscotoxins, and polysaccharides that exhibit immunomodulatory and anti-inflammatory effects. Clinical studies in human subjects suggest that mistletoe therapy may improve quality of life in patients with advanced cancers by reducing fatigue, supporting emotional well-being, and improving tolerance to chemotherapy-related side effects. Notably, research indicates that adding mistletoe extracts to treatment protocols may enhance tolerance to higher doses of gemcitabine, a chemotherapy agent commonly used in mesothelioma and other solid tumors. Mechanistically, mistletoe appears to support immune function through modulation of cytokine signaling, activation of natural killer cells, and regulation of inflammatory pathways. While not a replacement for conventional therapy, mistletoe extracts may serve as a supportive intervention that helps patients better tolerate intensive cancer treatments while maintaining overall well-being.

Medical Marijuana

Preclinical studies using mouse models and human melanoma cell lines have demonstrated that cannabinoids found in cannabis exhibit inhibitory effects on both melanoma and nonmelanoma skin cancers. Synthetic cannabinoids, in particular, have been shown to induce programmed cell death (apoptosis), inhibit angiogenesis, and suppress epidermal growth factor receptor (EGFR) signaling pathways critical for tumor growth and survival.

Additionally, cannabinoids have been observed to impair melanoma cell migration across the endothelium and reduce their ability to adhere to brain endothelial cells, suggesting a potential role in limiting metastatic spread. Research indicates that tetrahydrocannabinol (THC) decreases melanoma cell viability by triggering apoptosis, while also reducing cell proliferation, angiogenesis, and metastasis. Collectively, these findings suggest that THC may inhibit both the development and progression of melanoma at the cellular level (Mansoori et al., 2019).

Essiac Tea

Essiac tea is a traditional herbal formulation that typically includes burdock root as its primary ingredient, along with a combination of other botanicals commonly associated with immune and antioxidant support. Burdock root, in particular, has been studied for its potential immunomodulatory, anti-inflammatory, and free-radical-scavenging properties, which may contribute to general cellular protection and metabolic support. Despite its long history of use in complementary and alternative medicine, current scientific evidence does not support claims that Essiac tea can cure or directly treat cancer. Clinical data remain limited, and its use should not be viewed as a substitute for conventional oncologic therapies. That said, laboratory analyses have demonstrated that Essiac tea exhibits notably high antioxidant capacity reported in some studies to exceed that of well-known antioxidant sources such as red wine and green tea. As a result, Essiac tea may be more appropriately positioned as a supportive wellness intervention rather than a therapeutic agent. Its potential benefits may relate to oxidative stress reduction and immune system support, which could contribute to overall resilience and quality of life when used responsibly alongside standard medical care.

Burdock Root

Burdock root has been traditionally used in herbal medicine for its broad biological activity and is increasingly being examined in preclinical research for its anti-inflammatory, antibacterial, antioxidant, and hepatoprotective properties. The root contains a range of bioactive compounds, including lignans (such as arctigenin), polyphenols, flavonoids, and inulin-type polysaccharides, which are thought to contribute to its biological effects. Experimental and laboratory studies suggest that burdock root may influence inflammatory signaling pathways by modulating cytokine activity and reducing oxidative stress, both of which are relevant in the context of chronic disease and cancer-related inflammation. Arctigenin, one of the primary lignans found in burdock, has demonstrated the ability to inhibit cancer cell proliferation and induce apoptosis in certain cancer cell lines in vitro, though these effects have not yet been confirmed in human clinical trials.

In addition to its potential anti-cancer mechanisms, burdock root has shown promise in supporting liver health. Preclinical studies indicate hepatoprotective effects, including improved antioxidant enzyme activity and reduced markers of liver injury following toxic or pharmacologic insult. This has led to interest in burdock root as a supportive agent during or after cancer therapies that place metabolic stress on the liver, such as chemotherapy. While there is currently insufficient clinical evidence to support burdock root as a therapeutic intervention for cancer in humans, emerging data suggest it may play a complementary role in reducing inflammation, supporting detoxification pathways, and aiding recovery from treatment-induced hepatic stress. As such, burdock root is best positioned as a supportive botanical within an integrative care framework rather than a standalone cancer treatment.

St. John's Wort

St. John's Wort contains hypericin, a bioactive compound recognized for its potent photosensitizing properties. Hypericin has demonstrated the ability to induce cell death in human melanoma and squamous cell carcinoma (SCC) cell lines in preclinical studies, independent of tumor pigmentation. These effects have been observed both prior to and in conjunction with photodynamic therapy (PDT), highlighting hypericin's potential utility as a photosensitizing agent in oncology research. When activated by ultraviolet A (UVA) or visible light within the 400-700 nm range, hypericin generates reactive oxygen species that contribute to cytotoxic and antiproliferative effects in cancer cells. This light-dependent activation disrupts cellular membranes, mitochondrial function, and proliferative signaling pathways, ultimately leading to apoptosis and growth inhibition. Due to these characteristics, hypericin has been investigated as a promising natural compound for use in PDT protocols targeting cutaneous malignancies. While the majority of evidence remains limited to in vitro and experimental models, the findings suggest that hypericin may offer targeted cytotoxic activity when combined with controlled light exposure. However, further clinical studies are required to establish its safety, dosing parameters, and therapeutic efficacy in human cancer treatment. As such, St. John's Wort-derived hypericin is best viewed as a research-supported adjunct within photodynamic applications rather than a standalone anticancer therapy (Sharifi-Rad et al., 2019).

Green tea

Green tea contains a high concentration of polyphenols, which are powerful antioxidant compounds known for their ability to neutralize free radicals. Free radicals are unstable molecules that can damage cellular structures, including DNA, and their accumulation has been associated with the initiation and progression of cancer. By reducing oxidative stress, antioxidants play an important role in protecting cellular integrity and supporting normal cellular function. The most prominent and biologically active polyphenol in green tea is epigallocatechin gallate (EGCG). EGCG has been extensively studied for its antioxidant, anti-inflammatory, and antiproliferative properties. Preclinical research suggests that EGCG can influence multiple pathways involved in skin cancer development, including inhibition of abnormal cell growth, modulation of signaling pathways linked to tumor progression, and promotion of apoptosis in damaged or malignant cells. Additionally, green tea polyphenols have demonstrated protective effects against ultraviolet (UV) radiation-induced skin damage, a key risk factor for many skin cancers. These compounds may help reduce UV-induced oxidative stress, inflammation, and DNA damage in skin cells. While much of the supporting evidence comes from laboratory and animal studies, the findings suggest that green tea may serve as a supportive dietary component in skin cancer management and overall skin health

through its antioxidant and protective mechanisms.

Paclitaxel

Paclitaxel is a naturally derived chemotherapeutic agent originally isolated from the bark of the Pacific yew tree (*Taxus brevifolia*). It is classified as a taxane alkaloid and is widely used in oncology for the treatment of various solid tumors, including breast, ovarian, lung, and certain skin cancers. The anticancer activity of paclitaxel is primarily attributed to its ability to disrupt normal cell division. Paclitaxel binds to tubulin, a key structural protein involved in microtubule formation, and stabilizes microtubules by preventing their disassembly. This abnormal stabilization interferes with the dynamic restructuring required for mitosis, effectively arresting the cell cycle at the G2/M phase. As a result of prolonged mitotic arrest, cancer cells are unable to complete division and subsequently undergo programmed cell death (apoptosis). While paclitaxel is effective in targeting rapidly dividing tumor cells, its mechanism also explains the associated side effects observed in normal rapidly dividing tissues. Despite this, paclitaxel remains a cornerstone chemotherapy agent due to its well-characterized mechanism and demonstrated efficacy in clinical cancer treatment.

Circumin

Paclitaxel is a naturally derived chemotherapeutic agent originally isolated from the bark of the Pacific yew tree (*Taxus brevifolia*). It belongs to the taxane class of alkaloids and has become a cornerstone treatment in oncology, widely used for managing a range of solid tumors, including breast, ovarian, lung, and certain skin cancers. The anticancer effects of paclitaxel stem from its ability to interfere with normal cell division. Paclitaxel binds specifically to tubulin, a structural protein essential for the formation and function of microtubules during mitosis. By stabilizing microtubules and preventing their normal disassembly, paclitaxel disrupts the dynamic microtubule remodeling required for successful cell division. This interference leads to arrest of the cell cycle at the G2/M phase. Sustained mitotic arrest ultimately triggers programmed cell death (apoptosis) in rapidly dividing cancer cells. While this mechanism is effective at inhibiting tumor growth, it can also affect healthy tissues with high rates of cell turnover, contributing to well-recognized side effects. Nevertheless, due to its well-defined mechanism of action and substantial clinical efficacy, paclitaxel remains a foundational chemotherapy agent in modern cancer treatment protocols.

Basal cell carcinoma

Basal cell carcinoma (BCC) is the most common form of skin cancer and originates from basal cells located in the lowest layer of the epidermis. It is most frequently associated with chronic ultraviolet (UV) radiation exposure and commonly develops on sun-exposed areas such as the face, scalp, neck, and ears. Although BCC is generally characterized by slow growth and a very low risk of distant metastasis, it should not be considered benign. When left untreated, basal cell carcinoma can become progressively invasive, leading to significant local tissue destruction, ulceration, and involvement of underlying structures such as cartilage or bone.

Global treatment strategies for basal cell carcinoma are guided by multiple clinical and pathological factors, including tumor size, depth of invasion, anatomical location, histologic subtype, and individual patient characteristics such as age, immune status, and overall health. Lesions located in cosmetically or functionally sensitive areas often require more precise treatment approaches to balance complete tumor eradication with tissue preservation. Management most commonly involves surgical removal, which remains the gold standard for achieving cure in localized disease. However, additional therapies including topical treatments, radiation therapy, targeted systemic medications, or immunotherapy may be considered in cases of advanced disease, recurrence, or when surgical excision is not feasible. Early diagnosis and appropriate intervention are essential to minimize morbidity and achieve optimal long-term outcomes.

Surgery

The tumor and some of the healthy tissue surrounding it must be removed during surgery. This is generally performed in the operating room by an oncologist. Surgery is the standard of therapy for persons with local cancer and the primary treatment for those with regional basal cell carcinoma. Certain patients with advanced cancer may be candidates for surgery. If the cancer cannot be removed

surgically, it is deemed unresectable. Broad excision, dissection of lymph nodes are surgical approaches for treating local and regional basal cell carcinoma.

Wide excision

The primary therapeutic approach for basal cell carcinoma entails the surgical removal of the primary lesion situated on the skin. The extent of surgical intervention is determined by the cancer girth. When carcinomas are identified at a thickness of less than 1.0 mm, ambulatory surgery is frequently required as the principal treatment modality. The surgical intervention entails the removal of the tumour, including any subcutaneous tissue and a margin of healthy tissue, in order to attain a thorough elimination of malignant cells. It is advisable to conduct a sentinel lymph node biopsy in conjunction with the extensive excision, as described in the Diagnosis section that follows. When carcinoma is detected in situ (at stage 0), a surgical intervention consisting of the removal of a 5 mm (or 0.5 cm) margin of skin adjacent to the lesion is done. Overall, a positive correlation can be observed between the margin breadth and carcinoma thickness. The margin width is as follows: basal cell carcinoma with a thickness of 1.0 millimeters or less are assigned a width of 1 centimeter, while those surpassing a thickness of 2 millimeters are assigned a width of 2 centimeters. Contingent on the precise anatomical site and extent of the intervention, the implementation of a skin flap or skin transplantation may be required. When adjacent tissue is mobilized to provide coverage for the surgically excised area, a skin flap is produced. The procedure by which wounds are treated via skin transplants entails the transfer of skin from a unique anatomical site on the patient's body.

Chemotherapy

Chemotherapy uses drugs to selectively kill newly produced cancer cells from various body areas. Basal cell carcinoma is best treated with chemotherapy when surgery is inadequate or prohibited. Oral, topical, or intravenous chemotherapy can preferentially target cancer cells that have disseminated throughout the body due to bloodstream distribution. Many chemotherapy regimens can cure basal cell cancer. For early-stage or superficial basal cell carcinomas, topical chemotherapy may be beneficial. This treatment often uses imiquimod or 5-fluorouracil. These drugs suppress cancer cell growth when applied topically to the affected skin. Advanced illness patients may qualify for systemic chemotherapy. Basal cell carcinoma is treated with systemic drugs like vismodegib and sonidegib. Targeted medicines block signaling pathways to stop malignant cell growth. Basal cell carcinoma chemotherapy targets highly proliferative cells by disrupting essential pathways or preventing cell cycle stages, which are necessary for cancer cell viability. Targeted drugs like sonidegib and vismodegib block basal cell carcinoma cell proliferation and growth signaling pathways. Combine conventional medicine with supplementary or alternative therapy. Chemotherapy is often used with other therapies to improve treatment outcomes. To reduce tumors before surgery, neoadjuvant chemotherapy is given. Adjuvant chemotherapy combined with surgery can eradicate malignant cells and reduce the risk of recurrence.

Radiotherapy

Radiation therapy for cancer patients uses large amounts of x-rays or other high-energy particles. External-beam radiation therapy, widely used in clinical practice, delivers radiation to a patient through an external device. The device may change the radiation beam course and use several methods to reduce its harmful effects. Sometimes postoperative radiation therapy is recommended to prevent cancer recurrence. Adjuvant radiation therapy follows other treatments. Empirical evidence shows that radiation therapy dramatically lowers cancer recurrence in treated areas. Radiation therapy may relieve metastatic carcinoma symptoms such as bone pain and cerebral feelings. The procedure is often called "palliative radiation therapy". Palliative radiation therapy may involve whole-brain radiation therapy, which gives the brain several little doses of radiation. Linear accelerators (sometimes called "linacs"), Gamma Knives, CyberKnives, and TomoTherapy devices administer a limited amount of highly effective radiation therapy.

Immunotherapy

In this case, the body's natural defenses are used to fight cancer while improving the ability of the immune system to attack cancer cells. Done mostly for stage II, III and IV of the cancer. Monoclonal antibodies such as PD-1 and PD-L1 (atezolizumab) inhibitors have

been used. Other medically accepted treatment methods include; adjuvant high dose interferon, perfusion chemotherapy, Mohs micrographic surgery, curettage and electrodesiccation, cryotherapy, topical medication such as imiquimod cream, 5-fluorouracil cream and use of photodynamic therapy.

Non-traditional treatment and Herbal medication

Green tea

Green tea is rich in polyphenols, which are highly potent antioxidant compounds known for their ability to neutralize free radicals. Free radicals are unstable molecules that can damage cellular components, including DNA, proteins, and lipids, and their accumulation has been implicated in the initiation and progression of various cancers. By scavenging these reactive molecules, antioxidants help reduce oxidative stress and protect cells from genetic mutations that may contribute to carcinogenesis. Among the polyphenols found in green tea, epigallocatechin gallate (EGCG) is the most abundant and biologically active. EGCG has been extensively studied for its anti-carcinogenic properties and has demonstrated the ability to modulate multiple cellular pathways involved in cancer development. In the context of basal cell carcinoma, EGCG is thought to help inhibit abnormal cell proliferation, promote apoptosis of damaged or precancerous cells, and reduce inflammation and oxidative stress within the skin. These protective effects suggest that green tea, whether consumed as a beverage or utilized in topical formulations, may serve as a supportive adjunct in strategies aimed at reducing skin cancer risk and supporting overall skin health.

Hypericin (St. John's wort)

Hypericin is a naturally occurring photoactive compound derived from *Hypericum perforatum*, commonly known as St. John's wort. This compound is notable for its strong photosensitizing properties, which have made it a compound of interest in photodynamic therapy (PDT) for the treatment of certain skin conditions and cancers. When hypericin is exposed to specific wavelengths of light typically ultraviolet A (UVA) or visible light within the 400-700 nm range it becomes activated and generates reactive oxygen species that can selectively damage targeted cells. This light-activated response underlies hypericin's therapeutic potential, as it allows for localized cytotoxic effects while minimizing damage to surrounding healthy tissue. In laboratory and preclinical cancer cell assays, hypericin has demonstrated significant cytotoxic and antiproliferative activity, suggesting its ability to inhibit abnormal cell growth and induce apoptosis in malignant cells. These properties have prompted ongoing research into hypericin as a potential adjunct in the management of non-melanoma skin cancers, including basal cell carcinoma, particularly in settings where targeted, minimally invasive treatment approaches are desirable.

Paclitaxel

Paclitaxel, originally isolated from the bark of the Pacific yew tree (*Taxus brevifolia*), is a naturally derived alkaloid that is widely recognized as a potent chemotherapy agent. It has played a significant role in the treatment of various malignancies due to its unique mechanism of action on cellular division. Unlike many chemotherapeutic drugs that inhibit microtubule formation, paclitaxel binds directly to tubulin and stabilizes microtubules, preventing their normal disassembly during the cell cycle. This stabilization disrupts the dynamic process required for mitosis, effectively halting cell division and triggering apoptosis in rapidly proliferating cancer cells. By interfering with mitotic spindle function, paclitaxel causes cell cycle arrest at the G2/M phase, ultimately leading to programmed cell death. Because uncontrolled cellular proliferation is a hallmark of cancer, this mechanism makes paclitaxel particularly effective against a range of tumor types. Ongoing research continues to explore both systemic and localized applications of paclitaxel, as well as its potential role in combination therapies to enhance anticancer efficacy while minimizing toxicity.

Circumin

Curcumin is the bioactive polyphenolic compound responsible for the distinctive yellow color of turmeric and curry, and it is derived from the rhizome of *Curcuma longa* Linn. For centuries, curcumin has been used in traditional medicine, and more recently it has attracted significant scientific interest due to its anti-inflammatory, antioxidant, and chemopreventive properties. Extensive preclinical

research has demonstrated curcumin's ability to modulate multiple molecular pathways involved in carcinogenesis, including cell proliferation, apoptosis, angiogenesis, and inflammation. The chemopreventive effects of curcumin are believed to stem from its capacity to induce programmed cell death (apoptosis) in abnormal or malignant cells. Mechanistically, curcumin has been shown to upregulate the tumor suppressor protein p53, which plays a critical role in DNA repair, cell cycle arrest, and apoptosis. Additionally, curcumin may activate caspase-8 through the Fas (death receptor) signaling pathway, leading to initiation of the extrinsic apoptotic cascade. Through these mechanisms, curcumin helps limit uncontrolled cell growth and promotes the elimination of damaged or precancerous cells. Beyond its pro-apoptotic activity, curcumin also exhibits strong antioxidant effects that reduce oxidative stress, a known contributor to DNA damage and cancer development. Its ability to influence multiple signaling pathways simultaneously has made curcumin a compound of interest as a complementary or adjunctive agent in cancer prevention and supportive oncology care, including research into its potential role in non-melanoma skin cancers.

Mistletoe extracts

Mistletoe extracts, commonly referred to in clinical research as Iscador, are derived from *Viscum album* and have been studied extensively as a complementary therapy in oncology. Human clinical investigations suggest that mistletoe preparations may help alleviate treatment-related symptoms and contribute to improvements in overall quality of life among cancer patients. These benefits are thought to be associated with mistletoe's immunomodulatory properties, including its ability to influence cytokine production, enhance immune surveillance, and support systemic resilience during cancer treatment. In patients with advanced or metastatic tumors, the inclusion of mistletoe extracts as part of an integrative treatment regimen has been associated with improved tolerance to conventional chemotherapy. Notably, studies have reported that cancer patients receiving mistletoe therapy were able to tolerate higher doses of gemcitabine, a chemotherapeutic agent commonly used in the management of mesothelioma and other solid tumors. Improved chemotherapy tolerance may translate into fewer adverse effects, better adherence to treatment protocols, and enhanced overall treatment experience. While mistletoe extracts are not considered a primary anticancer therapy, their potential role as a supportive adjunct continues to be explored. Ongoing research aims to better define optimal dosing strategies, mechanisms of action, and patient populations most likely to benefit from mistletoe-based interventions within comprehensive cancer care programs.

EssiacTea

Essiac tea is a traditional herbal formulation that typically contains burdock root as its primary component, along with several other botanicals that have been associated with immunomodulatory and antioxidant activity. These herbs have historically been used in complementary and alternative medicine with the intent of supporting immune function, detoxification pathways, and overall cellular resilience. Despite its long-standing use and anecdotal popularity, current scientific research does not support claims that Essiac tea can cure or directly treat cancer. Clinical evidence remains limited, and it should not be considered a substitute for standard oncologic therapies. However, laboratory analyses have shown that Essiac tea possesses a notably high antioxidant capacity, with some studies reporting levels that exceed those found in well-known antioxidant sources such as red wine and green tea. The high antioxidant content may contribute to reduced oxidative stress by neutralizing free radicals, which are known to damage DNA and disrupt normal cellular function. As a result, Essiac tea may be more appropriately viewed as a supportive wellness intervention rather than a therapeutic cancer treatment. Its potential role may lie in promoting general immune support and oxidative balance, which could help improve overall well-being and quality of life when used responsibly alongside conventional medical care.

Burdock Root

Burdock root has been widely used in traditional herbal medicine and exhibits biological properties that suggest potential anti-inflammatory, antibacterial, antioxidant, anti-cancer, and liver-protective activity. It contains a variety of bioactive compounds, including lignans such as arctigenin, polyphenols, flavonoids, and inulin-type fibers, which are believed to contribute to its physiological effects. Preclinical and experimental studies indicate that burdock root may help modulate inflammatory pathways, reduce oxidative stress, and support immune regulation. Some laboratory research has also demonstrated antiproliferative and pro-apoptotic effects in certain

cancer cell lines; however, there is currently insufficient clinical evidence to confirm its effectiveness as a cancer treatment in humans. One of the most consistently observed benefits of burdock root relates to liver support. Preliminary findings suggest hepatoprotective effects, including the ability to enhance antioxidant enzyme activity and reduce markers of liver damage. This has led to interest in burdock root as a supportive botanical during recovery from hepatic stress or injury associated with cancer therapies such as chemotherapy. Overall, burdock root is best regarded as a complementary agent that may support inflammation control and liver recovery rather than as a standalone anticancer therapy.

Squamous Cell Carcinoma of The Skin

Squamous cell carcinoma (SCC) of the skin is a common form of non-melanoma skin cancer that arises from epidermal squamous cells, which make up the majority of the skin's outer layer. SCC most frequently develops in areas exposed to chronic ultraviolet (UV) radiation, such as the face, ears, neck, scalp, and hands. Although many cases grow slowly, SCC has a greater potential for local invasion and metastasis than basal cell carcinoma, particularly when lesions are large, poorly differentiated, or located on high-risk anatomical sites. Early detection and appropriate treatment are critical to prevent tissue destruction, recurrence, and spread to regional lymph nodes or distant organs. Global treatment strategies for cutaneous squamous cell carcinoma are guided by tumor size, depth, histologic features, anatomical location, patient immune status, and evidence of regional or distant spread. Management often requires a multidisciplinary approach that may include surgery, radiation therapy, chemotherapy, and immunotherapy depending on disease stage and progression.

Surgical Management

Surgery is the standard of care and primary treatment modality for most cases of localized and regional squamous cell carcinoma of the skin. The goal of surgical treatment is complete removal of the tumor along with an adequate margin of surrounding healthy tissue to reduce the risk of recurrence. Surgical intervention is typically performed by a dermatologic or oncologic surgeon in an outpatient or operating room setting. For patients with locally advanced disease, surgery may still be considered, either alone or in combination with additional therapies. Tumors that cannot be completely removed due to size, location, or involvement of critical structures are classified as unresectable. In such cases, alternative or adjunctive treatments are pursued. Surgical approaches may include wide local excision, Mohs micrographic surgery, and, when indicated, lymph node dissection.

Wide Local Excision

Wide local excision is a commonly employed surgical technique for treating cutaneous squamous cell carcinoma. This procedure involves removing the primary tumor along with a predefined margin of healthy surrounding tissue to ensure complete eradication of malignant cells. The width of the excision margin is determined by tumor depth, size, location, and histologic risk factors. Preoperative evaluation includes clinical examination and, when necessary, imaging studies to assess tumor extent and depth. During surgery, the tumor boundaries are carefully delineated to achieve adequate margins while preserving as much healthy tissue as possible. The lesion, along with a safety margin, is excised, and the wound is subsequently closed. Depending on the size and location of the surgical defect, reconstruction may involve direct closure, local skin flaps, or skin grafts. Pathologic evaluation of excised tissue is essential, and high-risk findings may prompt additional interventions such as radiation therapy or lymph node evaluation.

Chemotherapy and Systemic Therapy

Chemotherapy may be utilized in the management of squamous cell carcinoma when surgery is contraindicated, incomplete, or when there is evidence of metastatic disease. For superficial or early-stage SCC confined to the skin, topical chemotherapeutic agents such as 5-fluorouracil (5-FU) may be effective by inhibiting cancer cell proliferation and inducing apoptosis. In more advanced cases, systemic chemotherapy may be required. Commonly used agents include paclitaxel, cisplatin, methotrexate, and 5-fluorouracil. These drugs act by targeting rapidly dividing cells through mechanisms such as DNA synthesis inhibition, disruption of mitosis, or interference with cellular replication pathways. Chemotherapy is often used in combination with surgery or radiation therapy to enhance

treatment efficacy. Neoadjuvant chemotherapy may be administered prior to surgery to reduce tumor burden, while adjuvant chemotherapy is used postoperatively to eliminate residual malignant cells and decrease recurrence risk.

Radiation Therapy

Radiation therapy uses high-energy x-rays or particles to destroy cancer cells and is an important treatment option for patients who are not surgical candidates or who have high-risk or recurrent disease. External-beam radiation therapy is the most commonly used modality and allows precise targeting of the tumor while sparing surrounding healthy tissue. Postoperative (adjuvant) radiation therapy may be recommended in cases with positive margins, perineural invasion, or lymph node involvement. Radiation therapy has been shown to significantly reduce local recurrence in treated areas. In advanced or metastatic squamous cell carcinoma, radiation may also be used for palliative purposes, helping to relieve symptoms such as pain, bone involvement, or neurologic complications. Advanced delivery systems, including linear accelerators, Gamma Knife, CyberKnife, and TomoTherapy, allow highly targeted radiation with minimized collateral damage.

Immunotherapy

Immunotherapy has emerged as an important treatment option for advanced squamous cell carcinoma, particularly in stages II, III, and IV disease. These therapies enhance the body's immune response by targeting immune checkpoint pathways that cancer cells exploit to evade immune detection. Monoclonal antibodies targeting PD-1 or PD-L1 pathways have demonstrated efficacy in improving tumor control and survival in advanced cutaneous SCC. Immunotherapy is often considered when surgery and radiation are insufficient or contraindicated.

Additional Treatment Modalities

Other medically accepted treatment options may be appropriate depending on tumor characteristics and patient-specific factors. These include Mohs micrographic surgery for high-risk or cosmetically sensitive areas, curettage and electrodesiccation for select low-risk lesions, cryotherapy, topical treatments such as imiquimod or 5-fluorouracil, and photodynamic therapy. A personalized, stage-adapted treatment plan is essential to optimize outcomes and minimize morbidity.

Non-Traditional Treatment and Herbal Medication

Essiac Tea

Essiac tea is a traditional herbal formulation most commonly composed of burdock root, sheep sorrel, slippery elm bark, and rhubarb root. These botanicals have historically been associated with immune-modulating and antioxidant properties. Despite long-standing anecdotal claims surrounding its use in cancer care, current scientific evidence does not support Essiac tea as a curative or disease-modifying cancer treatment. That said, laboratory analyses have demonstrated that Essiac tea possesses a notably high antioxidant capacity reportedly exceeding that of red wine and green tea. Antioxidants play an important role in neutralizing reactive oxygen species (ROS), which are implicated in oxidative stress and cellular damage. While these properties may support general cellular health and immune resilience, they should be viewed as adjunctive wellness support rather than therapeutic intervention in oncology.

Burdock Root

Burdock root is rich in bioactive compounds such as lignans, polyphenols, and inulin, which contribute to its anti-inflammatory, antibacterial, hepatoprotective, and antioxidant properties. Preclinical studies suggest that burdock root may influence inflammatory signaling pathways and support liver detoxification processes. Although there is currently insufficient clinical evidence to confirm its efficacy in treating cancer in humans, preliminary research indicates that burdock root may help mitigate inflammation and oxidative stress. These properties may be particularly relevant in supporting liver recovery following chemotherapy or radiation exposure, which are known to place significant metabolic and oxidative burden on hepatic tissue. Thus, burdock root is best characterized as a supportive botanical that may aid recovery and systemic balance rather than a direct anticancer agent.

John's Wort

St. John's Wort contains hypericin, a biologically active compound with well-documented photosensitizing properties. Hypericin has demonstrated cytotoxic and antiproliferative effects in various human carcinoma and squamous cell carcinoma (SCC) cell lines, independent of pigmentation status, in controlled laboratory settings. Hypericin's mechanism of action is particularly relevant in the context of photodynamic therapy (PDT), where exposure to ultraviolet A (UVA) or visible light (400-700 nm) activates the compound, leading to oxidative stress and targeted cancer cell death. These findings highlight its potential utility as an adjunct compound in photodynamic oncology research. However, it is important to note that St. John's Wort also interacts with numerous pharmaceutical agents by inducing cytochrome P450 enzymes, making clinical supervision essential if considered in any therapeutic context.

Green Tea Polyphenols

Green tea is a rich source of polyphenolic compounds, most notably epigallocatechin gallate (EGCG), which exhibit potent antioxidant and anti-inflammatory activity. Polyphenols are capable of scavenging free radicals unstable molecules that can damage DNA, proteins, and cellular membranes. Accumulating evidence suggests that oxidative DNA damage may play a role in carcinogenesis. EGCG has been shown in experimental models to influence cell cycle regulation, apoptosis, angiogenesis, and inflammatory signaling pathways. While these mechanisms are biologically relevant to cancer prevention research, human clinical data remain mixed. As such, green tea is best regarded as a dietary antioxidant contributor that supports overall cellular health rather than a standalone cancer-preventive or therapeutic agent.

Circumin

Curcumin is the bioactive polyphenol responsible for the characteristic yellow pigmentation of turmeric (Curcuma longa Linn). Extensive preclinical research has demonstrated curcumin's chemopreventive, anti-inflammatory, and antioxidant properties. Mechanistically, curcumin has been shown to modulate multiple molecular pathways involved in carcinogenesis, including p53 tumor suppressor signaling and caspase-mediated apoptosis. Specifically, curcumin may induce programmed cell death through increased p53 expression or activation of caspase-8 via Fas receptor pathways. Despite these promising findings, curcumin's clinical utility is limited by poor bioavailability, rapid metabolism, and low systemic absorption. Consequently, curcumin is most accurately described as a research-supported chemopreventive compound with supportive potential rather than a clinically validated cancer therapy.

Vitamin C

Vitamin C (ascorbic acid) is a water-soluble antioxidant essential for collagen synthesis, immune function, and skin health. Its ability to neutralize free radicals contributes to protection against oxidative stress and environmental damage, including UV-induced skin injury. While diets rich in antioxidants, including vitamin C, are generally associated with improved overall health, evidence supporting vitamin C as a direct preventive or therapeutic agent for skin cancer remains inconclusive. Research continues to explore its role in redox balance and immune support, but current data do not support its use as a primary intervention for squamous cell carcinoma. Vitamin C is best understood as a nutritional support nutrient that contributes to tissue integrity and antioxidant defense.

Mind-body interventions such as yoga, meditation, and mindfulness-based stress reduction have gained increasing recognition for their positive effects on quality of life, stress management, and emotional resilience among cancer patients (Sharifi-Rad et al., 2019). These practices may support neuroendocrine balance, immune regulation, and psychological coping during cancer treatment. However, they are not intended to function as direct treatments for squamous cell carcinoma. Similarly, dietary strategies emphasizing whole grains, fruits, vegetables, and nutrient-dense foods rich in antioxidants, vitamins, and minerals are often adopted as complementary approaches alongside conventional medical care. While the direct efficacy of anti-inflammatory or antioxidant-rich diets in treating SCC remains uncertain, such dietary patterns may support systemic health, reduce inflammatory burden, and enhance overall well-being. These approaches should be viewed as supportive lifestyle strategies, not replacements for evidence-based medical treatment.

Seborrheic Keratosis

Seborrheic keratosis is a very common, benign skin condition characterized by noncancerous growths that develop on the surface of the skin. These lesions often appear as raised, waxy, or "stuck-on" plaques and can vary in color from light tan to dark brown or black. Although seborrheic keratoses are medically harmless and do not require treatment, individuals may choose to have them removed for cosmetic reasons or if the lesions become irritated, itchy, inflamed, or prone to friction. A variety of treatment options are available, ranging from minimally invasive physical procedures to topical therapeutic approaches. The choice of treatment depends on factors such as lesion size, number, location, patient preference, and overall health.

Cryotherapy

Cryotherapy is one of the most commonly used treatments for seborrheic keratosis. This method involves the application of liquid nitrogen to freeze and destroy the abnormal skin cells within the lesion. The extreme cold induces controlled cellular damage, causing the growth to blister, dry out, and eventually detach from the skin. The procedure is relatively quick and typically performed in an outpatient setting. Patients may experience mild discomfort during application, along with temporary redness, swelling, or blistering at the treatment site. These effects usually resolve within days to weeks. Cryotherapy is widely favored due to its simplicity, effectiveness, and low risk profile, though its suitability depends on lesion characteristics and patient tolerance.

Light Cautery (Electrosurgery / Electrocautery)

Light cautery uses a high-frequency electric current to heat and destroy targeted tissue. When applied to seborrheic keratosis, the electrical energy causes controlled tissue damage, allowing the lesion to be removed or slough off naturally. This technique is fast, generally well-tolerated, and particularly useful when treating multiple lesions in a single session. Mild discomfort, temporary scabbing, or pigmentation changes may occur, but healing is typically rapid. Light cautery is often selected for its efficiency and precision.

Laser Excision

Laser excision utilizes focused wavelengths of light to precisely target and ablate seborrheic keratosis lesions. Commonly used lasers include carbon dioxide (CO_2) and erbium lasers, chosen based on lesion depth and location. Laser treatment offers excellent control, minimal bleeding, and the ability to treat lesions in delicate or hard-to-reach areas. However, it may require multiple sessions and is often more costly than other options. Laser excision is typically reserved for patients seeking high cosmetic precision or when other methods are less suitable.

Curettage

Curettage involves physically scraping the lesion from the skin using a curette, a small, sharp, spoon-shaped instrument. This method is often combined with electrosurgery to enhance completeness of removal and reduce bleeding. Curettage is particularly effective for small, superficial lesions and provides immediate results. While generally safe and efficient, it may not be ideal for thicker or deeply adherent lesions.

Shave Excision

Shave excision is a straightforward surgical technique in which the lesion is removed at the level of the surrounding skin using a sterile medical blade. This approach is quick, requires minimal equipment, and typically does not require sutures. Shave excision is especially effective for raised or protruding lesions and provides immediate cosmetic improvement. However, incomplete removal or recurrence can occur in some cases.

Non-Traditional Medication

As an alternative to standard medicine, apple cider vinegar, tea tree oil, castor oil, iodine, and the use of hydrogen peroxide to make

them look less noticeable, baking soda paste, and herbal treatments like calendula, dandelion, comfrey, and omega-3 fatty acid vitamins from food.

Apple cider vinegar

Apple cider vinegar is a common home remedy that is thought to have acidic properties that might help lessen the look of seborrheic keratosis. Some people say that a cotton swab should be used to apply diluted ACV straight to the sores. It is thought that the acidic nature of ACV will break down the keratosis over time. However, there isn't a lot of scientific evidence to back its effectiveness, and because it's acidic, using it may irritate or burn the skin.

Tea Tree Oil

Tea tree oil has been used in many skin care treatments because it kills germs and reduces inflammation. Some people put diluted tea tree oil straight on their seborrheic keratosis because they think it might help reduce swelling and maybe even make the sores smaller. But there isn't much proof that it works for seborrheic keratosis in particular, and it could cause skin irritation or allergic reactions.

Castor Oil

Castor oil is another treatment that is sometimes mentioned for seborrheic keratosis. Some people think that putting castor oil on these growths might help soften them and make them look less noticeable. However, there isn't enough scientific proof to show that it works to treat seborrheic keratosis.

Iodine

Iodine, which is often used as a disinfectant, has been suggested as a way to treat seborrheic keratosis that is applied to the skin. Some people put iodine straight on the sores because they think it will help them get smaller or go away. That being said, there isn't much scientific evidence to back this method, and iodine can irritate the skin or cause allergic reactions in some people.

Hydrogen Peroxide

Hydrogen peroxide, a compound commonly used for its antiseptic properties, has been suggested anecdotally as a means to reduce the visible appearance of seborrheic keratosis. It is thought that topical application may help break down or exfoliate the thickened surface layers of the lesion. However, this approach lacks robust scientific validation, and improper or repeated use can lead to skin irritation, tissue damage, or chemical burns. As such, hydrogen peroxide should be used with caution and is not considered a reliable or evidence-based treatment option for seborrheic keratosis.

Baking Soda

Baking soda paste has also been suggested as a home-based remedy for seborrheic keratosis. This approach typically involves mixing baking soda with water to create a paste that is applied to the affected areas, with the intention of exfoliating dead skin cells or softening the surface of the lesion. However, there is limited scientific evidence supporting its effectiveness for seborrheic keratosis. Additionally, baking soda's abrasive nature and alkaline pH may disrupt the skin barrier, potentially leading to irritation, dryness, or skin damage if used excessively. As a result, this method is not considered a reliable or evidence-based treatment option.

Herbal and Dietary Support for Skin Health: An Evidence-Based Perspective

Herbal remedies and dietary supplements have been suggested as different ways to treat some skin diseases, such as seborrheic keratosis. Some people think that herbs and vitamins might be good for your skin, but it's important to remember that there isn't a lot of scientific proof that they can treat seborrheic keratosis.

Calendula

Calendula comes from the marigold plant and is good for reducing inflammation and protecting cells from damage. Some people put calendula creams or extracts on skin problems like seborrheic keratosis because they think it might help reduce swelling and speed up the mending process. However, there aren't any rigorous scientific studies that prove it works for seborrheic keratosis.

Dandelion

Dandelion is often thought of as a medicinal plant, and it has been used for many health reasons in the past. Some people who believe in natural treatments say that seborrheic keratosis can be treated by putting dandelion extracts or oils on it. Some people think it might help with inflammation and soothe the face. However, there isn't enough scientific proof to show that it works specifically for seborrheic keratosis.

Comfrey

Comfrey has traditionally been used for its potential wound-healing and anti-inflammatory properties, leading some individuals to consider it as a topical option for seborrheic keratosis. Comfrey-based creams or ointments are sometimes applied with the intention of softening lesions or reducing their visible appearance. However, the safety of comfrey for topical use remains a concern, as the plant contains pyrrolizidine alkaloids, compounds associated with potential liver toxicity. Due to these safety risks and the lack of strong clinical evidence supporting its effectiveness, comfrey is not generally recommended for the treatment of seborrheic keratosis.

Omega-3 Fatty Acids

Dietary products with omega-3 fatty acids, which can be found in fish oil or flaxseed oil, are often promoted as being good for skin health. There is some evidence that omega-3 fatty acids can help skin problems by reducing inflammation. These products are taken by some people who want to improve the look of seborrheic keratosis or other skin problems. While omega-3 fatty acids have shown promise in some skin diseases, there isn't a lot of proof that they can help with seborrheic keratosis.

You should be careful when using herbal medicines and dietary supplements. These natural products might be helpful, but how well they work for seborrheic keratosis hasn't been thoroughly researched through rigorous scientific studies. Herbal remedies can also have side effects, mix badly with medicines, and vary greatly in quality and purity, all of which can be harmful to your health. Before using herbal treatments or dietary supplements for seborrheic keratosis, it is very important to talk to a doctor, preferably a dermatologist. A healthcare provider can give advice, evaluate a person's health, and suggest treatments or alternatives that are based on proof.

People with seborrheic keratosis are often told to try medical treatments that are backed by science, like freezing, laser therapy, electrosurgery, or other skin procedures. These treatments are done by trained pros and have been tested to make sure they are safe and effective for treating seborrheic keratosis. It's important to be careful when using non-traditional methods. People often think that these treatments are natural and safe, but they can have bad effects like skin irritation, burns, or allergic reactions. Also, depending on treatments that haven't been proven to work could make it take longer to get the right medical care or effective interventions.

Lichen planus

Lichen planus is a chronic inflammatory disorder that can affect the skin, mucous membranes, hair, and nails. Although its precise cause remains unknown, it is widely believed to result from an abnormal immune-mediated response in which the immune system mistakenly targets healthy tissue. Because the condition is inflammatory in nature, treatment focuses on reducing immune activation, controlling inflammation, and relieving symptoms such as itching, pain, and lesion formation. Management strategies vary depending on disease severity, location, and response to therapy, and commonly involve topical or systemic medications.

First-Line Therapy: Topical Corticosteroids

For localized or mild forms of lichen planus, topical corticosteroids are considered the first-line treatment. These agents are available in various formulations, including creams, ointments, gels, and sprays, allowing treatment to be tailored to the affected area. Topical corticosteroids reduce redness, irritation, itching, and lesion formation by suppressing immune cell activity and inhibiting inflammatory pathways. Commonly used agents include clobetasol, triamcinolone, and betamethasone. In some cases, topical nonsteroidal anti-inflammatory drugs (NSAIDs) may also be used to further reduce inflammation and discomfort.

Systemic Corticosteroids for Severe or Widespread Disease

In patients with more severe, extensive, or rapidly progressive lichen planus, systemic corticosteroids may be prescribed. Oral corticosteroids are effective in reducing widespread inflammation but carry a significant risk of adverse effects when used long term, including weight gain, osteoporosis, metabolic changes, and increased susceptibility to infection. As a result, systemic steroids are typically reserved for short-term use in severe cases or when other treatments have failed, with careful tapering once symptoms improve.

Retinoids: Oral Vitamin A Derivatives

Oral retinoids, such as acitretin, are another therapeutic option, particularly for cases that do not respond adequately to corticosteroids or involve mucosal surfaces. Derived from vitamin A, retinoids modulate immune responses and help reduce inflammation and abnormal skin cell turnover. While potentially effective, these agents can cause adverse effects such as dryness of the skin and mucous membranes and require close monitoring due to their systemic effects.

Topical Calcineurin Inhibitors

Topical calcineurin inhibitors, including tacrolimus and pimecrolimus, act by locally suppressing immune activity in affected tissues. These agents are often used for lichen planus involving sensitive areas such as the face or mucous membranes, where prolonged corticosteroid use may be inappropriate or poorly tolerated. Although they can reduce inflammation and lesion severity, their long-term safety in lichen planus remains under investigation, and cautious use is recommended.

Immunomodulatory and Immunosuppressive Therapies

In cases of severe, widespread, or treatment-resistant lichen planus, systemic immunomodulatory medications may be considered. Agents such as methotrexate, cyclosporine, and mycophenolate mofetil suppress abnormal immune activity and can help halt inflammation and tissue damage. Methotrexate functions as an antimetabolite that broadly inhibits immune cell proliferation, while cyclosporine and mycophenolate mofetil target specific immune pathways. These medications can be effective but are associated with serious potential side effects, including liver and kidney toxicity, increased infection risk, and long-term complications, necessitating strict medical supervision and regular monitoring.

Symptomatic Relief: Antihistamines

Oral antihistamines are frequently used to manage the itching associated with lichen planus. Although they do not treat the underlying inflammatory process, they can significantly improve patient comfort and quality of life. Non-drowsy antihistamines such as cetirizine, loratadine, or fexofenadine are often preferred, particularly for daytime use, as they minimize sedation while providing symptomatic relief.

Phototherapy as a Non-Pharmacologic Option

Phototherapy, particularly narrowband ultraviolet B (NB-UVB) therapy, has demonstrated effectiveness in treating lichen planus. Controlled exposure to UVB light helps suppress cutaneous immune responses, leading to reductions in inflammation, itching, and lesion severity. Another option, PUVA therapy (psoralen plus ultraviolet A), combines a photosensitizing agent with UVA exposure to

enhance therapeutic effects. Phototherapy is conducted in a medically supervised setting to minimize risks such as sunburn and long-term phototoxicity.

Emerging and Targeted Therapies

Ongoing research is exploring newer biologic and targeted therapies for lichen planus, including agents that inhibit specific inflammatory pathways such as TNF-alpha or IL-12/IL-23. These medications are already used in other autoimmune and inflammatory conditions and may offer future treatment options for refractory lichen planus. However, their safety, efficacy, and long-term role in lichen planus management require further clinical investigation.

Non-traditional treatment

Emollients and moisturizers are not direct therapies for lichen planus; nevertheless, applying emollients and moisturizers daily can assist with the dryness and soreness that come along with having the condition on your skin. Emollients and moisturizers are also helpful in reducing the appearance of lichen planus. People who want to find unusual or nontraditional ways to treat lichen planus typically look into dietary modifications and other nontraditional approaches. These items can help relax the regions that are hurting and stop them from itching, which can assist. The alleviation of symptoms, as well as perhaps altering the immunological response, is the purpose of the aforementioned techniques and dietary adjustments. It is essential, however, to keep in mind that there is not a great deal of scientific evidence to support their efficacy in treating lichen planus in particular.

Aloe Vera

Aloe vera is widely used in skincare products due to its soothing, moisturizing, and anti-inflammatory properties. Individuals with lichen planus sometimes apply aloe vera gel or lotions directly to affected areas in an effort to reduce itching, irritation, and localized swelling. When used topically, aloe vera may help calm inflamed skin and provide temporary symptomatic relief, particularly for discomfort associated with lichen planus lesions or ulcers.

However, despite its popularity, there is limited high-quality scientific evidence supporting aloe vera as an effective treatment for lichen planus specifically. While its anti-inflammatory and hydrating effects may offer short-term comfort, its impact on the underlying immune-mediated disease process and long-term disease progression remains unclear. As a result, aloe vera may be considered a complementary, symptom-relief option rather than a definitive therapy, and it should not replace evidence-based medical treatments.

Turmeric

Turmeric's primary component, curcumin, has anti-inflammatory and anti-apoptotic properties and can protect cells from harm. People who have lichen planus lesions often take turmeric in pill form or apply turmeric paste to their skin because they believe that doing so will help alleviate the discomfort and swelling associated with the lesions. However, there is not much evidence to suggest that it is effective in treating lichen planus, and it is possible that it is not suitable for everyone because it has the potential to produce allergic reactions or to interact negatively with other medications.

Witch Hazel

Witch hazel is extracted from the witch hazel plant and is typically applied topically or applied topically to the face to cure a variety of skin conditions. Because of the belief that it possesses anti-inflammatory properties, there is a possibility that some individuals will use it to alleviate the itching or swelling that is caused by lichen planus lesions. However, there is not sufficient evidence from the scientific community to suggest that it helps treat lichen planus.

Herbal remedies, such as camomile, are known to relax as well as reduce inflammation. Because of this, camomile is sometimes applied directly to the skin or mixed with bath water to assist in relieving the itching and irritation that are caused by lichen planus lesions. For instance, it is believed that face creams and infusions prepared from camomile might help to smooth and calm the skin on

the face. Chamomile might be of some use, but there isn't any scientific evidence to suggest that it helps treat lichen planus, and some individuals might have an allergic reaction to it.

When inflammation occurs in the body, being overweight or obese can make the condition worse. According to the findings of certain studies, there may be a connection between being overweight and a variety of skin disorders that result in inflammation. People who have lichen planus and are overweight or obese may find that leading a healthier lifestyle, one that includes regular exercise and a balanced diet, makes them feel better overall and reduces inflammation. However, additional research is required to establish direct proof that a reduction in body fat alleviates the symptoms of lichen planus. Lichen planus sores are known to become worse when exposed to the sun, which is especially problematic for skin that is already damaged from sun exposure. Use a broad-spectrum sunscreen with a high sun protection factor (SPF) to protect your skin from harmful ultraviolet rays. Sunscreen can help prevent sunburn and may make spots feel less uncomfortable, but it does not treat lichen planus itself. Sunscreen can also help prevent sunburn.

Homoeopathic remedies are considered by some individuals who suffer from lichen planus. In homoeopathy, it is believed that extremely diluted chemical substances might assist the body in its self-healing process. A homoeopathic physician may recommend drugs such as sulfur, arsenicum album, or graphite to a patient after listening to the patient's symptoms. However, there is insufficient evidence to support the claim that homoeopathy can assist in treating lichen planus, and this claim is not supported by robust scientific data. It is essential to exercise extreme caution when undergoing alternative treatments for lichen planus, including the use of topical treatments, alterations to one's way of life, and any other similar procedures. It is currently unclear how well these strategies work, and the degree to which they are effective varies greatly from one individual to the next. However, they may help relieve symptoms or be a part of an individual's overall plan to cope with their disease. People who suffer from lichen planus ought to make it a top priority to discuss these additional choices with their primary care physicians. You can get guidance from a dermatologist or another professional healthcare practitioner who can determine whether or not these therapies are appropriate for you. They can also ensure that these treatments complement evidence-based medical treatments rather than taking their place.

Molluscum contagiosum

Molluscum contagiosum is a highly contagious viral skin infection caused by a member of the poxvirus family. It is characterized by small, firm, flesh-colored or pearly papules that often have a central indentation. The virus spreads easily through direct skin-to-skin contact, contact with contaminated objects such as towels or clothing, and autoinoculation through scratching or shaving. Molluscum contagiosum is most commonly seen in children, but it can also affect adults, particularly those with compromised immune systems or through sexual contact when lesions involve the genital area. Treatment for molluscum contagiosum varies significantly from patient to patient and depends on several factors, including the location and number of lesions, the patient's age, immune status, symptom severity, cosmetic concerns, and personal or parental preferences. In many cases, particularly in healthy children, molluscum contagiosum is a self-limiting condition that may resolve spontaneously over several months to a few years without medical intervention. However, treatment is often pursued to reduce the risk of viral spread, minimize discomfort or itching, prevent secondary bacterial infection, and address cosmetic or psychosocial concerns. Globally, molluscum contagiosum is managed using a range of therapeutic approaches, including topical medications, physical removal techniques, and immune-modulating therapies. Common treatment options include topical agents designed to induce a localized immune response or destroy infected skin cells, as well as in-office procedures such as cryotherapy, curettage, or chemical cauterization. The choice of treatment is typically individualized, balancing effectiveness, tolerability, risk of scarring, and patient comfort, particularly in pediatric populations.

Cold Therapy

In the process known as cold therapy, the molluscum lesions are frozen with liquid nitrogen. The cells that are infected with the disease are killed by the cold. Because of its relatively high rate of success, this approach is frequently utilized in medical clinics. However, while it is being performed, it may cause discomfort, and in rare instances, it may result in the formation of faint scars or a change in the complexion of the skin. It may take more than one treatment session to eliminate all of the sores.

Laser Treatment

In the process of laser treatment, pulsed dye lasers or carbon dioxide lasers are typically utilized to precisely target and eradicate the molluscum lesions. This treatment is exceedingly precise and has the potential to be effective for lesions of varying sizes. Laser therapy may not be as painful as some of the other treatment options, and it may also reduce the likelihood of scarring. However, it is possible that more than one session will be necessary, and some people are concerned about the associated cost.

Curettage

During the curettage process, a sharp instrument known as a curette is used to scrape the wounds clean. To remove the sores, a topical anaesthetic is administered, and then the area is carefully scraped. This approach is efficient and effective for treating single tumours and takes very little time. However, it may be uncomfortable, and there is a possibility that there may be some small bleeding or scarring.

Topical Treatments

Molluscum contagiosum is a skin condition that can be treated with retinoids that are applied topically, such as tretinoin or adapalene. These drugs function by hastening the turnover of skin cells, which, in the long run, might assist in the healing of scars. However, their effectiveness is not guaranteed, and a negative effect of using them is that they may irritate the skin.

Cantharidin

Cantharidin is a chemical compound that is applied to molluscum lesions. It is derived from blister beetles and is used to treat the sores. It causes blistering, which pulls the lesions away from the skin and leads to an inflammatory response. After a short time, the affected region is cleaned up, and the blisters are removed. Patients receive this treatment in a medical facility such as a hospital or clinic. It is effective, however, using it may be painful or uncomfortable at times.

Imiquimod Cream

If you have molluscum contagiosum and take Imiquimod Cream, it will alter the reaction of your immune system and cause it to attack the virus that is responsible for the condition. It can create an inflammatory reaction when it is given directly to the lesions, which then eliminates the lesions. However, there is no guarantee that it will work, and it may cause the skin to become irritated or red.

Cimetidine

Cimetidine is a type of medication known as an H2 histamine receptor blocker that is sometimes suggested for use in the treatment of molluscum contagiosum in children. In most cases, it is utilized as a treatment for acid reflux. It is believed that it will assist the body's defensive system in combating the infection. However, there is not a great deal of evidence to suggest that it is effective, which is likely why it is not utilized very frequently.

When determining the most appropriate treatment for molluscum contagiosum, medical professionals consider a variety of factors, including the patient's age, the number of lesions, the location of the lesions, and how well the patient can deal with any potential adverse effects. Additionally, certain wounds may heal themselves without any treatment at all.

Non-Traditional Medication

Molluscum contagiosum is a contagious skin condition, and people who desire natural therapies or treatments they can do at home frequently look into non-traditional or alternative treatments. Tea tree oil has traditionally been used for its anti-inflammatory and antimicrobial properties. Molluscum sores are treated by some people with tea tree oil that has been diluted with water. It is believed to have antiviral properties, which means that it could be useful in the fight against the virus that causes molluscum contagiosum. However, there is not a lot of empirical evidence to suggest that it is effective, and tea tree oil has been known to cause skin irritations

and allergic responses in some individuals.

Apple Cider Vinegar

It is believed that apple cider vinegar (also known as ACV) possesses acidic and antiviral properties that could aid in the treatment of molluscum contagiosum. Some individuals believe that by applying undiluted apple cider vinegar directly to the sores, the acidity will assist in the process of breaking down the sores. Despite the lack of sufficient scientific evidence that it is effective for Molluscum contagiosum and the fact that it is acidic, it has the potential to irritate or burn the skin.

Oatmeal Bath

Oatmeal baths are a common remedy for soothing irritated and reddened skin in people. Oatmeal contains compounds that, when applied to the skin, can help relieve itching and some other skin conditions. Oatmeal baths may alleviate some of the symptoms of molluscum contagiosum and soothe the skin that contains molluscum sores, but they do not treat the condition or eliminate the virus that causes it.

Coconut Oil

Coconut oil has traditionally been used for its calming and moisturizing properties. Coconut oil is used by some individuals who have molluscum sores in the hope that it will help soothe the skin and reduce the amount of agony they are experiencing. Regrettably, there is not a great deal of evidence from research to suggest that it is effective in treating molluscum contagiosum.

Lemon Myrtle Shrub

It is believed that the oil extracted from the lemon myrtle shrub, which is native to Australia, can destroy germs. Molluscum contagiosum ulcers can occasionally be cured with a diluted version that is applied topically. Its proponents believe that the antiviral properties it possesses could be useful in the fight against the virus. On the other hand, there is no proof in the form of scientific research to support its usefulness for treating molluscum contagiosum.

People frequently believe that these non-traditional remedies are natural and risk-free; nevertheless, they have not been thoroughly examined in rigorous clinical trials to determine whether or not they are effective in treating molluscum contagiosum or whether they pose any safety concerns. In addition, relying solely on alternative remedies may lengthen the treatment process or make it more difficult to access appropriate medical care, both of which may allow the illness to persist for a longer period. It is imperative that you utilize these natural remedies with caution and under the supervision of a medical professional, ideally a dermatologist. People should consult a physician or registered nurse to ensure that they receive an accurate diagnosis, the appropriate treatment, and sound guidance on how to treat molluscum contagiosum in a way that is both risk-free and supported by evidence.

Actinic keratosis

Actinic keratosis is often caused by long-term exposure to ultraviolet (UV) radiation from the sun or artificial sources like tanning beds. These sores usually appear as rough, scaly patches on parts of the body that get a lot of sun, like the face, scalp, ears, neck, wrists, and backs of hands. Actinic keratoses can turn into squamous cell carcinoma, a type of skin cancer if they are not managed. To successfully treat actinic keratosis, many different treatment options are available.

Topical Treatments

5-Fluorouracil is a topical anticancer drug that stops cells that are dividing quickly from making DNA. By stopping this process, it kills off abnormal cells in actinic keratosis tumours (Lee, Ratnakumar, Hung, Rokunohe, & Kawasumi, 2020). When used as a cream, it irritates, reddens, and crusts the area where it is applied. As the medicine works to get rid of the abnormal cells, the area may become red and swollen.

Imiquimod (5%), an immune response modifier, stimulates the immune system to find and destroy skin cells that aren't normal. When applied to the skin, it causes inflammation, which helps get rid of actinic keratosis spots. Redness, itching, and flaking of the skin at the application site are all signs of this inflammatory response.

Topical Diclofenac Sodium 3% Gel is an NSAID that helps reduce swelling and kills abnormal skin cells when applied to the skin. This cream could irritate and dry out the skin where it is applied. A chemical solution is put on the skin during a chemical peel, which takes off the top layers. This process shows the better, newer skin underneath. A few rounds of superficial peels may be needed to make actinic keratosis lesions look better, and they can cause redness, peeling, and short-term irritation.

Cryotherapy

In cold therapy, liquid nitrogen is used to freeze actinic keratosis cells and kill them. When the tumour lesions are frozen, the cells inside them break apart and die. The dead cells then flake off. Even though the process is short, it can be painful during and afterwards. It could lead to blisters, brief changes in the colour of your skin, and mild pain.

Electrodesiccation and Curettage

During electrodesiccation and curettage, the dermatologist scrapes off the lesions with a curette and then uses an electric needle to seal the area. Even though it gets rid of obvious lesions, it may sometimes leave scars or changes in the skin's colour.

Photodynamic Therapy (Light-Based Therapy)

Light therapy, also known as photodynamic therapy (PDT), involves putting a photosensitizing drug on the skin and then using a certain wavelength of light to make it work. Reactive oxygen species are made when this happens, and they attack and kill AK cells. During and after treatment, PDT can make the skin red, swell, and temporarily sensitive to light.

Non-Traditional Treatment

Aside from traditional treatments, people with actinic keratosis can change their diet to include anti-inflammatory foods like fruits and vegetables as well as foods high in omega-3 fatty acids; take supplements like omega-3 fatty acids, vitamin D, vitamin E, and beta-carotene; use aloe vera gel on the skin; use herbal remedies like chamomile, calendula, and aloe vera; protect yourself from the sun; and avoid friction injuries and other things that can make the condition worse. What you eat can affect the health of your face in general. Eating foods that reduce inflammation, like leafy greens, broccoli, tomatoes, and fruits that are high in antioxidants, like berries, oranges, and apples, may help manage actinic keratosis by lowering oxidative stress and inflammation in the skin.

Omega 3 Fatty Acids

It is known that foods high in omega-3 fatty acids, like flaxseeds, walnuts, and fatty fish like salmon, can help reduce inflammation. Omega-3 supplements might help lower inflammation, which is good for skin health and might have an effect on actinic keratosis sores.Omega-3 Fatty Acid supplements such as EPA and DHA have shown promise in helping people with inflammatory skin problems. They might help control the skin's inflammatory reaction and improve its barrier function, which could help with managing actinic keratosis (Tow, et al., 2023). Skin health depends on having enough vitamin D. Keeping your vitamin D levels at a healthy level may help your skin in general and may even affect how quickly your actinic keratosis develops.

Vitamin E

As an antioxidant, vitamin E may help fight free radicals in the skin, which could lower the oxidative stress and inflammation that come with actinic keratosis. Beta-carotene is found in many fruits and veggies. It helps make vitamin A and is an antioxidant. It might help protect the skin from sun damage and might have an effect on actinic keratosis.

Aloe Vera

Aloe vera has been used for a long time to treat skin irritation, redness, and inflammation because it is known to be healing. Even though there isn't a lot of study on actinic keratosis itself, its anti-inflammatory properties may help with pain and skin healing. Herbal medicines such as chamomile and calendula can reduce swelling and help wounds heal. Putting chamomile or calendula extracts on the face may help reduce redness and speed up the healing process.

Keeping the skin safe from UV rays is an important part of treating actinic keratosis and stopping it from getting worse. To protect the skin and eyes from UV damage, people should wear sunscreen with a high SPF, seek shade during peak sun hours, wear protective clothes, and wear hats and sunglasses. Accidental friction injuries, like pushing or scratching, can make actinic keratosis sores worse. By staying away from these things that cause itching, you can keep the condition from getting worse. Although these non-traditional methods can manage actinic keratosis, it is important to keep in mind that there is not enough scientific proof that they treat actinic keratosis. These methods are often considered add-on treatments to standard medical care. It is therefore advisable that they be used with medicines that have been approved by dermatologists.

Erythema Nodosum

It is an inflammatory skin disorder that is characterized by red, uncomfortable, and sensitive lumps or nodules that form on the skin, most commonly on the shins. These lumps or nodules can be found anywhere on the body. Behind these nodules, the fatty tissue that lies just below the surface of the skin is commonly irritated. It is a pattern of reactions that could be brought on by some underlying problems or situations. In most cases, the disease reveals itself as many raised, symmetrical lesions that are sensitive to the touch and warm to the touch. The nodules can have a red or reddish-purple colouration, and their size can range from tiny lumps to larger, more obvious lesions. Additionally, the nodules can take on a variety of shapes. They often make their appearance for a few days, and they can last for a few weeks before gradually vanishing. However, they often leave behind a discoloration that looks like a bruise.

Although the exact aetiology of erythema nodosum is not always clear, it has been found that the condition is commonly associated with a hypersensitive reaction of the immune system. The onset of this condition has been linked to a wide variety of underlying conditions or factors, some of which include infections such as tuberculosis and streptococcal infections, inflammatory bowel diseases such as Crohn's disease and ulcerative colitis, pregnancy, autoimmune disorders such as sarcoidosis and Behcet's disease, and in a smaller number of cases, malignancies. To arrive at a correct diagnosis, a comprehensive clinical examination that places special emphasis on the unusual appearance of the nodules must be performed. However, additional testing, such as imaging scans, skin biopsies, and blood tests, may be necessary to discover the underlying cause or rule out other illnesses presenting symptoms that are related to this condition. The primary objective of the treatment plan for erythema nodosum is to address the underlying cause or precipitating factor of the condition. For symptomatic relief, nonsteroidal anti-inflammatory medicines (NSAIDs), rest, and, in severe cases or when connected to particular disorders, corticosteroids or other treatments that modulate the immune system, are routinely utilized.

It is common practice to treat the discomfort and inflammation caused by erythema nodosum with non-steroidal anti-inflammatory drugs such as ibuprofen and naproxen (Meretskyi & Meretska, 2023). These medications work by stopping the enzymes COX-1 and COX-2 from producing prostaglandins, which are the molecules in charge of pain and inflammation and are responsible for their creation. They are useful in the treatment of inflammatory skin disorders as well as painful conditions. On the other hand, an excessive amount of NSAID use or high dosages may induce side effects such as problems with the kidneys, ulcers, or inflammation in the gastrointestinal tract.

Iodide of potassium is sometimes suggested as an adjunctive therapy for the treatment of EN due to its anti-inflammatory properties. It is thought that it has an effect on the synthesis of cytokines as well as the immune response, both of which contribute to the healing of skin lesions. Despite this, it is unknown how exactly it treats erythema nodosum or how its mechanism of action works. Stomachaches, allergic responses, and issues relating to the thyroid are some of the potential adverse effects that could occur in susceptible individuals.

Corticosteroids like prednisone are examples of powerful anti-inflammatory medications that, by dampening the immune system's response, reduce inflammation and make the symptoms of erythema nodosum more bearable. They are typically used in situations that are characterized as being extreme or resistant. In addition to causing weight gain, mood swings, osteoporosis, and an increased risk of infection, prolonged or high-dose corticosteroid treatment can also lead to increased susceptibility to infections.

Dapsone is a medication that modulates the immune system and is sometimes prescribed to patients undergoing treatment for erythema nodosum (Molinell, Paolinelli, Campanati, & Brisigotti, 2019). It accomplishes this by dampening the immune system's reactions, as well as inflammation. Although it is more commonly used for treating other dermatological conditions, dapsone is an option that could be considered for treating cases of erythema nodosum that do not respond to standard therapy. Anaemia, issues with the liver, and a somewhat rare but potentially life-threatening allergic reaction known as dapsone hypersensitivity syndrome are some of the side effects that could occur.

These medications are prescribed to treat the symptoms associated with erythema nodosum, reduce inflammation, and exert control over the immune system. However, the choice of medication and the amount of time it is taken to provide that medication are both impacted by the severity of the patient's symptoms, as well as the individual patient features and the underlying cause of erythema nodosum. It is necessary to have a conversation with a healthcare provider to choose the best way to proceed, taking into account any potential adverse effects and signals for avoidance.

Alterations to one's diet and complementary treatments are examples of non-conventional approaches that have gained favour as a means of treating diseases such as erythema nodosum erythema nodosum. These methods are intended to be used in conjunction with conventional treatments, as they can alleviate symptoms and boost the overall health of the skin. It is hypothesized that incorporating foods rich in anti-inflammatory characteristics into a person's diet may assist in reducing the inflammation that is associated with erythema nodosum. There is some evidence that eating fruits and vegetables strong in antioxidants, such as berries, oranges, and cherries, as well as leafy greens, broccoli, and bell peppers, can help reduce inflammation. These foods also contain vitamins and phytochemicals. Walnuts, flaxseeds, and fatty fish (salmon, mackerel) are examples of foods that are high in omega-3 fatty acids, and it's possible that eating these foods can help reduce inflammation in the body. Although further research is required to understand whether or not omega-3 supplements are especially useful in erythema nodosum, it is possible that taking them is still an option that should be considered.

Some herbs have been used traditionally because of their ability to calm the skin and minimize any inflammation that may be present. Aloe vera gel, which is produced from the aloe plant and is well-known for its ability to calm the skin, may be able to assist in alleviating some of the pain and inflammation that are associated with erythema nodosum. These plants have been used topically as a treatment for inflammation, much as chamomile, calendula, and turmeric. It is common knowledge that calendula and chamomile have the potential to calm the skin, while turmeric contains curcumin, which research has shown to have anti-inflammatory qualities.

Exposure to the sun can make skin conditions such as Erythema nodosum significantly worse (Schleicher & Vlahovic, 2022). It is possible to lessen the likelihood of flare-ups, prevent skin irritation, and halt the progression of lesions by using sunscreen and wearing protective clothing. It is recommended to apply sunscreens that offer protection against both UVA and UVB rays, as well as a high sun protection factor (SPF).

Although the unorthodox methods being discussed have the potential to be effective, it is essential to exercise caution when employing them and to combine them with traditional treatments. There is a paucity of research that looks particularly at how these approaches influence erythema nodosum, and the degree to which they are successful can vary from person to person. In addition, it is conceivable that these strategies will not address the underlying factors that contribute to erythema nodosum. Before beginning any modifications to your diet or taking any herbal treatments or supplements, it is essential to consult a medical professional or a dermatologist first. They can offer advice on alterations to a diet that is safe and acceptable, possible interactions between herbs and prescriptions, how to effectively administer topical treatments, and the necessity of sun protection. This ensures that a comprehensive

approach for managing EN will be implemented, taking into account the specific needs of each individual in terms of their health and avoiding any adverse effects or drug interactions.

Necrobiosis lipoic

Necrobiosis lipoic is a Granulomatous inflammatory skin condition that typically manifests itself on the shins, although it can also appear in other parts of the body if left untreated. It is a condition that lasts for a long time. Diabetes mellitus is usually associated with this condition, which occurs more frequently in females. It is believed that immune-mediated processes that damage skin blood vessels and produce inflammation are involved, although the exact pathophysiology is unknown. This results in the distinguishing clinical features of well-defined, shiny, reddish-brown plaques with atrophic alterations. These plaques can be seen almost anywhere on the body.

This ailment can be challenging to control due to the limited therapy options available and the fact that it is chronic. Some approaches have been implemented in the field of global medicine to treat the symptoms and halt the progression of the disease. In less severe cases, topical steroid medications that also contain calcineurin inhibitors are routinely utilized either in conjunction with other forms of treatment or as the initial method of care. High-potency topical steroids, such as clobetasol propionate, help reduce inflammation and itching that are caused by necrobiosis lipoic. They achieve their primary purpose by dampening the inflammatory response of the skin. Other potential treatments include calcineurin inhibitors like tacrolimus or pimecrolimus, particularly in areas where the administration of steroids would be inappropriate due to the presence of thin skin or the danger of skin atrophy. The ointments should be administered straight to the parts of the skin that are affected by the condition. Because prolonged use of high-potency steroids might have adverse effects such as thinning of the skin, patients should be periodically checked by medical specialists.

When administered to isolated lesions, intralesional triamcinolone injection is effective. Triamcinolone, a kind of corticosteroid, is injected directly into the areas that are affected by the condition. Injecting a concentrated amount of corticosteroid at the location of the lesion is how corticosteroids work to effectively reduce inflammation and promote healing. With the help of a thin needle, medical professionals administer this medication straight into the necrotic lipoic lesions caused by necrobiosis. Because of the variability in responses across individuals, it may be necessary to have multiple injections spread out over time to reap the long-term advantages.

Corticosteroids are only used in life-threatening emergencies that are deteriorating rapidly and in patients for whom topical or intralesional medicines have not been effective. Prednisone and other orally taken systemic corticosteroids, including dexamethasone, have powerful anti-inflammatory effects. It is not recommended to take this drug for an extended time because there is a risk of developing major side effects from doing so, including osteoporosis, increased vulnerability to infections, and weight gain. Patients who are taking oral corticosteroids need to have their dosage gradually reduced while also being properly monitored. This will help to lessen the severity of any adverse effects.

Off-label use of pentoxifylline, which is thought to have anti-inflammatory and enhanced blood flow properties, has led to its withdrawal from the market. Because it lessens inflammation and boosts circulation, it has the potential to be useful in the treatment of necrobiosis lipids. Its involvement in treating non-local impairment may be limited when compared to the role played by other therapies, and individual outcomes may vary.

Necrobiosis lipoic lesions are often frozen with liquid nitrogen during the cryotherapy process. A medical practitioner will cover the lesions with liquid nitrogen, which will cause the lesions to freeze and eventually fall off. Although it may not be helpful for extensive lesions, it can lessen the size of smaller lesions as well as the inflammation that they cause. It's possible that reaching an acceptable conclusion will require more than one session.

In specialized clinics, light-based therapies such as narrowband UVB or PUVA are administered to patients under the supervision of medical professionals. These treatments modulate the immune response, which in turn lessens the severity of inflammation caused by necrobiosis lipoic lesions. Phototherapy is a method of treating necrobiosis lipoid that involves administering carefully calibrated

quantities of light to the parts of the skin that are affected by the condition.

Non-Traditional Treatment

Walnuts, flaxseeds, chia seeds, and fatty fish are examples of foods that are high in omega-3 fatty acids. Eating these foods alongside a diet that is rich in fruits and vegetables is regarded to be the most effective way to reduce inflammation. These foods contain antioxidants and minerals that may help regulate the inflammatory response that occurs within the body. People who suffer from conditions that cause inflammation of the skin, such as psoriasis, may find that taking omega-3 fatty acids and antioxidants helps reduce the level of inflammation in their bodies. Taking into consideration alterations to one's diet may work to enhance overall health and even aid in the management of inflammation, but the precise manner in which they do so may vary from person to person. It is recommended to consult the services of a nutritionist or a healthcare professional to obtain tailored nutritional recommendations. Supplements containing omega-3 fatty acids are often taken to raise the overall intake of beneficial lipids. These dietary supplements may be produced using ingredients derived from plants, such as flaxseed oil or fish oil. People who have necrobiosis lipoic may benefit from the anti-inflammatory properties of omega-3 fatty acids, which may help to manage the inflammatory response that occurs within the body. Studies have shown that taking omega-3 supplements may have a very minor impact on inflammation; however, more research is required to understand whether or not these supplements aid with necrobiosis lipoic in particular.

Herbal treatments such as chamomile, calendula, and turmeric, all of which have anti-inflammatory properties and have a long history of use for treating a variety of skin conditions, are examples of natural herbal medications. The compounds included in these herbs have the potential to relieve inflammation and soothe irritated skin when they are applied topically. They can be used for necrobiosis lipoic lesions as poultices, in creams, or as infused oils; nevertheless, additional research is required to verify their efficacy in treating specific conditions.

It is common knowledge that aloe vera has properties that reduce inflammation and promote relaxation. When used topically, aloe vera gel has the potential to alleviate the itching and moderate inflammation caused by necrobiosis lipoid lesions. There is a possibility that the anti-inflammatory and wound-healing properties of aloe vera could alleviate some of the symptoms associated with necrobiosis lipoic. The affected areas of skin might receive the gel topically by having it applied directly to them.

It is essential to protect the skin from being exposed to the sun for an excessive amount of time. It is possible to prevent necrobiosis lipoic lesions from becoming more severe by using sunscreen and dressing in protective clothing. Skin stress and friction damage may contribute to an exacerbation of le necrobiosis lipoicions. Avoiding activities or situations that rub against the skin or otherwise cause damage to it is one way to reduce the risk of flare-ups occurring.

Rosacea

Rosacea is a common chronic skin illness that looks like tiny red papules and pustules on the face, as well as visible blood vessels, swelling, and redness on the face. It primarily affects the cheeks, nose, forehead, and chin in the centre of the face. Around the world, laser therapy and topical and oral antibiotics are used to treat rosacea (Zhang, Tang, Wang, Fang, & Sun, 2020). For mild to moderate rosacea, topical medicines are often utilized as first-line therapy. An antibiotic with anti-inflammatory qualities is metronidazole. It functions by lowering inflammation, inhibiting specific inflammatory pathways, and focusing on the illness-causing microorganisms. Additionally, it prevents bacteria from producing DNA, which either kills the germs or slows down their growth.

Azelaic acid possesses antibacterial and anti-inflammatory properties. It functions by lowering rosacea-related inflammation and preventing the generation of reactive oxygen species. It also can reduce the creation of aberrant skin pigmentation and normalise keratinization. By lowering inflammation and focusing on certain immune cells and proteins implicated in the aetiology of rosacea, the anti-parasitic drug ivermectin has demonstrated effectiveness in treating rosacea. Demodex mites, which are assumed to play a role in rosacea in certain people, might potentially be impacted.

Sodium sulfacetamide works through its antimicrobial characteristics. It prevents bacteria from growing on the skin's surface, which can help rosacea patients produce pustules and papules. It also contains anti-inflammatory properties when mixed with sulphur, which helps to lessen the condition's accompanying redness and irritation.

For the treatment of rosacea, oral antibiotics such as doxycycline, minocycline, and tetracycline are frequently used to lower inflammation and regulate bacterial growth. Tetracyclines work by preventing the synthesis of proteins in bacteria. They attach themselves to the ribosomes of bacteria, which are the parts of the cell that make proteins. They bind to the ribosomal subunits and prevent amino acids from attaching themselves to the expanding protein chains. This effectively halts the synthesis of vital proteins needed for bacterial growth and replication. This suppression of protein synthesis interferes with the ability of microorganisms, especially those found on rosacea-related skin, to proliferate and spread. These antibiotics work to lessen the bacterial load on the skin by preventing bacterial development, which is frequently connected to the inflammatory reaction observed in rosacea.

Research has demonstrated that tetracycline, minocycline, and doxycycline have anti-inflammatory qualities in addition to their antibacterial ones. They can suppress the generation of specific inflammatory mediators, including reactive oxygen species, chemokines, and cytokines, which promote the inflammatory processes linked to rosacea. These antibiotics aid in regulating the general inflammatory response in rosacea-affected skin by lowering the levels of these inflammatory cytokines.

Furthermore, by altering the activity of immune cells implicated in the inflammatory process, these antibiotics modify the immunological response. They change how immune cells that cause and maintain inflammation, such as macrophages and neutrophils, function. The antibiotics assist in lessening the heightened inflammatory reactions associated with rosacea by controlling these immune responses. Research indicates that specific tetracyclines, such as minocycline and doxycycline, can suppress MMP activity, which in turn lessens inflammation and tissue damage in the skin affected by rosacea. Enzymes called matrix metalloproteinases (MMPs) are involved in inflammation and tissue deterioration.

In addition to antibiotics, isotretinoin is a strong oral drug that is mostly used for severe acne, though it can also be used for severe rosacea. It functions by going after the sebaceous glands, lowering sebum production, and restoring regular skin cell exfoliation. Isotretinoin lessens the severity of rosacea symptoms by controlling these processes, which also helps to reduce inflammation and stop clogged pores.

Light- and laser-based therapies are becoming more and more common and successful in treating some rosacea symptoms. A variety of lasers can target visible blood vessels and lessen redness, including intense pulsed light (IPL) devices and pulsed dye lasers (Husein-Ahmed & Steinhoff, 2021). These therapies function by specifically focusing on the blood vessels that are responsible for the redness and eliminating them without harming the skin around them. In certain situations, laser therapy for rosacea can provide long-term advantages by dramatically improving the appearance of blood vessels and redness. Nevertheless, several sessions could be necessary to achieve the best outcomes. Dermatologists frequently advise combining these methods to manage rosacea more successfully. Generally, they advise a customised course of treatment that includes laser therapy in addition to topical and oral drugs, based on the severity of the patient's disease and unique needs.

The primary non-traditional therapies that are taken into consideration are dietary adjustments, the use of green tea extract, probiotics, skin care products, acupuncture, essential oils (including lavender, camomile, and coconut oil), and natural anti-inflammatory products like Aloe Vera gel. Some people find comfort in recognising and avoiding dietary triggers that worsen their rosacea symptoms. Alcohol, hot beverages, spicy food, and some food additives are common triggers. Although triggers differ from person to person, dietary changes may lessen the frequency of symptom flare-ups.

Probiotics have been investigated for their possible use in the treatment of inflammatory skin diseases like rosacea. Probiotics are well known for improving gut health by encouraging a balance of beneficial bacteria. Restoring the proper balance of gut flora may have a good impact on skin health, including rosacea, according to certain research. Still, further investigation is required to prove a conclusive connection.

Polyphenols found in green tea have antioxidant and anti-inflammatory qualities. Some apply topically or take green tea extract orally as supplements in the hopes of lessening rosacea-related irritation. Some people with rosacea may benefit from these chemicals in green tea, despite the extremely limited data.

Because of its calming and anti-inflammatory qualities, aloe vera is widely used. Applying pure Aloe Vera gel topically can reduce rosacea-related redness and irritation, providing momentary relief. To prevent any potential irritants, it is imperative to confirm the purity of the substance being used.

Some essential oils, such as camomile and lavender, have soothing and anti-inflammatory qualities. Some people may find relief from the topical application of diluted essential oils. However, it is important to exercise caution because some people may have an allergic reaction to essential oils or have skin irritation. Because coconut oil has emollient qualities, some people use it as a moisturiser. Its ability to treat rosacea, however, is yet anecdotal, and it might not be suitable for everyone as it might make some people's problems worse.

It is believed that acupuncture, an ancient Chinese treatment that involves inserting tiny needles into predetermined body locations, will restore equilibrium to the flow of energy. Acupuncture sessions may help control rosacea symptoms since some patients experience symptom reduction from them. The efficiency of it may differ from person to person.

Honey is well renowned for its antibacterial and wound-healing qualities, especially raw or Manuka honey. Because honey can calm and moisturise, some people apply it topically to parts of their skin that are afflicted. Nevertheless, there is scant scientific data to support its effectiveness in treating rosacea. Even though some people respond well to these unconventional treatments, it's important to proceed with caution and consult medical professionals, especially dermatologists or other experienced practitioners. What works for one individual may not work for another, and several natural therapies may combine with prescription drugs or create unfavourable side effects.

Furthermore, there is little scientific or anecdotal data to support the safety and efficacy of these rosacea therapies. Thus, more research on scientific studies and clinical trials is required to determine their efficacy, safety, and proper usage guidelines tailored to the treatment of rosacea.In summary, effective management of rosacea requires a comprehensive, multimodal treatment approach that may include topical and oral medications, laser or light-based therapies, and targeted lifestyle modifications. This integrated strategy focuses on reducing inflammation, minimizing redness and visible blood vessels, controlling flare-ups, and alleviating associated symptoms, with the goal of improving both skin health and overall quality of life. For patients considering complementary or non-traditional therapies, it is important to discuss these options with a healthcare provider to ensure they are used safely and in alignment with evidence-based medical treatments. The most successful rosacea management plans are individualized, combining conventional and supportive therapies tailored to the patient's specific triggers and symptom profile, and guided by a dermatologist experienced in treating the condition.

Pityriasis Rosea

Pityriasis rosea is a harmless skin disorder that clears up on its own over time. Lesions on the trunk, arms, and legs that are oval-shaped and either pink or red are characteristic of this condition. On occasion, it has been connected to illnesses produced by viruses, in particular those brought on by the human herpesviruses HHV-6 and HHV-7. In the absence of any specific treatment, the condition will typically resolve itself within a few weeks to a few months on its own. Symptoms like soreness and itching, on the other hand, are amenable to treatment with medication. The itching associated with pityriasis rosea is typically treated with corticosteroids, which are a common treatment used to treat the condition (Leung, Lam, Leong, & Hon, 2021). However, the condition typically clears itself on its own. These medications alleviate itching, reduce inflammation, and suppress the immune system to achieve their desired effects. They are available in a variety of formats, including oral tablets, ointments, and topical creams, among others. Hydrocortisone and triamcinolone are two examples of topical corticosteroids that can be administered directly to the skin that is affected by the condition. In moderate cases of pityriasis rosea, hydrocortisone creams or ointments are routinely used to ease itching and reduce inflammation.

Hydrocortisone is available in a variety of strengths. If the condition's associated irritation or itching becomes severe, a stronger corticosteroid medication known as triamcinolone may be advised as a treatment option.

Oral corticosteroids may be prescribed for a short time to patients who are suffering from acute itching or a widespread rash. When pityriasis rosea is more severe, a systemic corticosteroid medication such as prednisone may be given for a short period as a means of managing symptoms and reducing inflammation. Corticosteroids regulate gene expression and limit the manufacture of many inflammatory mediators. They do this by attaching themselves to glucocorticoid receptors in the cells of an organism. The immunological response and the release of inflammatory cytokines are both reduced when corticosteroids are used to treat pityriasis rosea lesions, which results in less itching, less redness, and less overall discomfort.

However, because corticosteroids can have adverse effects if they are used in excess or for a lengthy time, it is essential to use them carefully and under the supervision of a medical professional when taking them. When used for an extended time, corticosteroids can lead to immunosuppression, hyperpigmentation, osteoporosis, and thinning of the skin, which can make bruising more likely. When pityriasis rosea is identified and corticosteroids are advised, especially in circumstances of extreme inflammation or itching, a medical professional may propose a tapering program to safely lessen the dosage and eventually terminate the prescription. This is done to alleviate the symptoms of pityriasis rosea, which include severe inflammation or itching. Tapering lowers the risk of adrenal suppression and withdrawal symptoms, both of which may occur if corticosteroids are abruptly discontinued. Tapering is also known as weaning.

Although corticosteroids can reduce symptoms, it is essential to keep in mind that they do not alter the natural progression of pityriasis rosea nor do they speed the condition's resolution. As a consequence of this, the primary objective of their treatment for this condition is not to cure it but rather to alleviate the associated discomfort. Antibiotics such as azithromycin, clarithromycin, erythromycin, and doxycycline are not utilized in the treatment of the underlying cause of pityriasis rosea; however, these antibiotics may be supplied if secondary bacterial infections are suspected or found to be present. Pityriasis rosea can cause skin lesions and itching, either of which can lead to degradation of the skin or open sores, both of which are conducive to the colonization of bacteria and infections. In these circumstances, the use of antibiotics is indicated to cure or prevent these secondary infections.

Erythromycin puts a stop to the multiplication of bacteria by inhibiting the process of protein synthesis and destroying their ribosomes, which ultimately results in the death of bacterial cells. You may be advised to do so if there is a likelihood that a secondary bacterial infection will develop as a result of scratching the rash or irritating the skin. It is helpful in the treatment or prevention of bacterial disorders that may emerge from inflammation and the breakdown of skin tissue. Similar to erythromycin, azithromycin is a macrolide antibiotic that works by inhibiting bacteria's ability to produce proteins. This is how erythromycin works. People who have pityriasis rosea have an increased risk of developing subsequent bacterial infections, therefore this factor may also be taken into consideration in those cases. Pityriasis rosea is one of the skin conditions that can be treated with azithromycin because it has anti-inflammatory properties that help reduce inflammation caused by secondary bacterial infections. Clarithromycin is an additional macrolide antibiotic that inhibits the growth of bacteria by targeting the ribosomes of the bacteria. In the same way as erythromycin and azithromycin are used, it can be given to patients suffering from secondary bacterial infections caused by skin irritation or scratching carried on by the rash brought on by pityriasis rosea.

Doxycycline, an antibiotic with a broad spectrum of activity, is a member of the tetracycline class of medications. It achieves its purpose by inhibiting the production of proteins by bacteria and stymieing the growth of germs that are associated with cutaneous conditions. Even though it is not a primary treatment for pityriasis rosea itself, it can be used in circumstances where there is a potential for bacterial infection as a result of scratching or skin breakdown brought on by the rash. This is one of the conditions in which it can be used. It is essential to keep in mind that the administration of standard antibiotic treatment for cases of pityriasis rosea is not recommended when there are no bacterial complications present. This occurs as a result of the increased risk of antibiotic resistance, in addition to any potential adverse effects that may arise from the use of antibiotics. As a consequence of this, the usage of these products ought to be supervised by a dermatologist or another type of healthcare expert. This arises when it has been established whether

or not the sickness is being made more difficult by a secondary bacterial infection.

Non-Rraditional Treatment

Some of the non-traditional treatments for rosea include taking baths in oatmeal, using camomile and aloe vera, applying coconut oil, and exposing oneself to natural light. To give oneself an oatmeal bath, one must first immerse oneself in a tub that is filled to the brim with colloidal oatmeal, which is composed of oats that have been finely ground and dissolved in water. Oatmeal contains several compounds, including avenanthramides, which have properties that make them both anti-inflammatory and antioxidant. When oatmeal is mixed into bathwater, it helps ease the itching and pain caused by pityriasis rosea lesions and soothes irritated skin. It also has the potential to reduce irritation. It does this by producing a protective barrier for the skin, which helps to retain moisture and reduces inflammation.

To prepare an oatmeal bath, first grind some colloidal oats into a fine powder, and then mix the powder with some warm water in a bathtub. Soaking in the bath for fifteen to twenty minutes is recommended for the patient so that the oatmeal can more effectively coat the skin and provide relief. After washing your face, patting it dry with a towel will help your skin retain its natural moisture. The leaves of a succulent plant are used in the production of aloe vera. Because of the polysaccharides and glycoproteins that it contains, it possesses qualities that are anti-inflammatory, moisturizing, and wound-healing. When used topically, aloe vera gel can help alleviate the itching and discomfort caused by pityriasis rosea lesions, calm inflamed skin, and reduce the appearance of redness. Its cooling effect provides rapid relief from discomfort, while its anti-inflammatory properties assist in soothing skin that has been irritated.

Young aloe vera plants are the best source for extracting the gel. The individual may also decide to make use of aloe vera gel that is available for purchase in stores. A very thin layer is often applied topically to the parts of the skin that are affected. To alleviate discomfort and bring down inflammation, this procedure is repeated throughout the day as often as is required.

Coconut oil, which has properties that include moisturizing, antimicrobial, and a high quantity of fatty acids, is extracted from the flesh of coconuts. When applied topically, coconut oil helps to moisturise and nourish skin that is affected by pityriasis rosea, which in turn reduces symptoms of dryness and itching. Because of its antibacterial properties, it may also help prevent subsequent bacterial infections that may arise as a consequence of skin irritation or scratching. These infections may be brought on by a combination of factors.

After the affected region of the skin has been warmed very little, a very thin layer of coconut oil should be applied to the surface of the wound. A little massage should be performed after that to improve absorption. In addition, it should be reapplied to the affected area as frequently as required to preserve the skin's moisture and reduce irritation.

Exposure to the sun's UVB radiation is sometimes used as a therapy for the treatment of skin conditions such as pityriasis rosea. It may be helpful to expose the affected area to natural light to reduce inflammation, promote skin healing, and speed up the process of getting rid of the rash. UVB radiation can, in addition to having anti-inflammatory properties, diminish the immunological reaction that contributes to skin inflammation. This is the case because UVB radiation has anti-inflammatory properties. The patient should first spend brief amounts of time, roughly ten to fifteen minutes outside in the sun, preferably during off-peak hours, to limit their overall exposure to ultraviolet rays. It is recommended that the duration of the exposure be gradually increased for as long as it is safe to do so. However, excessive sun exposure should be avoided at all costs because it may make the skin condition even more severe. Unaffected regions should always have sunscreen applied to them so that they do not get sunburned.

Camomile, a herb that has anti-inflammatory and relaxing properties, can be applied topically to reduce irritation and itching caused by skin illnesses such as pityriasis rosea. Camomile is effective in treating these conditions. Camomile contains a variety of compounds, including alpha-bisabolol and chamazulene, among others. These chemicals can calm irritated skin and also possess anti-inflammatory qualities. The flowers of camomile are steeped in water that has been brought to a boil during the process of preparing camomile tea. After allowing the mixture to cool, a clean towel is used to apply pressure to the areas that are affected by camomile tea that has

been allowed to cool. Alternatively, you might incorporate it into your bathwater to have the same relaxing effect. Camomile extract can also be used topically in the form of lotions and creams, which can be applied to the affected area to calm inflammation and reduce redness.

These nontraditional approaches to treating pityriasis rosea have as their primary objectives the alleviation of symptoms and the provision of emotional support during the illness. It is essential to keep in mind that different people will have different responses and that these methods cannot take the place of seeking professional medical counsel or using prescribed medications. It is in your best interest to consult with a dermatologist to obtain an accurate diagnosis and recommendations for the most effective method of treatment for pityriasis rosea.

Conclusion

In conclusion, a comprehensive examination of conventional and organic treatments for dermatological disorders reveals a growing interest in alternative techniques that extend beyond the scope of traditional pharmacological practices. The notion of epidermal covering, as elucidated by Dr. Christina Rahm, represents a novel concept that exhibits considerable potential. This nanotechnology-based technique enhances the epidermis' defense system against a wide range of environmental threats by including iron oxide nanoparticles, citric acid, stabilized ionic silver, and nano-sized zeolite. Extensive study has been conducted on alternative therapies, including vitamin C, zeolites, hypochlorous acid, potassium iodine, and silica, in order to investigate their potential efficacy in preventing skin damage resulting from exposure to harmful substances. The significance of exploring alternative therapies becomes more pronounced as the medical field confronts the intricate challenges presented by diverse skin conditions. Moreover, the essay presents a comprehensive examination of the worldwide prevalence of dermatological problems and the wide range of pharmaceutical and non-pharmaceutical approaches being utilized to alleviate their symptoms.

The aforementioned acknowledgment underscores the imperative of utilizing a variety of techniques in the pursuit of skin wellness, surpassing the confines of traditional medical practices. The incorporation of these numerous modalities plays a crucial role in developing a complete approach to the treatment of skin diseases, taking into account the varied attributes of environmental exposures and individual skin needs. The attainment of effective therapies for skin ailments will require a delicate balance between technology breakthroughs, such as epidermal coating, and traditional, natural cures. There exist a multitude of prospective pathways for future progress within this realm of investigation, which augurs favorably for the amelioration of skin health and overall well-being. The potential for developing more personalized and effective approaches in skin disease prevention and treatment lies in the integration of contemporary scientific insights with established therapeutic approaches. This is due to the increasing understanding of skin physiology and the influence of environmental factors.

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