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## AARS News

### 10<sup>th</sup> Annual AARS Scientific Symposium Registration is live

We encourage you to register now for our free luncheon symposium to be held in person on Wednesday, May 18, 2022 from 11:00 AM – 1:00 PM at the Oregon Convention Center. Co-chaired by AARS Past Presidents J. Mark Jackson and Lawrence Eichenfield, it's sure to be a great afternoon of acne, hidradenitis suppurativa, and rosacea research highlights. This annual event is held in conjunction with the Society for Investigative Dermatology meeting and is a great chance to network with AARS members and researchers! If you aren't able to travel to Portland, don't fret as selected videos will be made available after the symposium on the AARS website for member viewing! [Free registration to reserve your spot here!](#)

**AARS BoD Member Emmy Graber invites you to earn free CME!** AARS Members are invited to attend two free CME meetings on acne, rosacea and acne scarring. These will be held in person on Friday, June 24, 2022 and virtually on Tuesday, October 18, 2022. For further details and to register online and view more information, proceed to this website today: <https://armmeeting.com/>

### AARS Celebrates with Patients and Corporate Benefactors for Rosacea Awareness Month

In addition to AARS programs with rosacea patients and more online and in-office education distributed throughout the month of April, AARS Past President Julie Harper and Executive Director Stacey Moore participated in person with Galderma Laboratories personnel who hosted a town hall to learn more about rosacea diagnosis and provider and patient needs. The event was well received and very positive to celebrate rosacea awareness efforts and collaborate for the treatment of rosacea patients. Patient videos were shared, and employees were able to ask questions of the AARS and of Galderma leadership regarding the ways that rosacea patients can be better supported. Galderma Laboratories has been a proud Corporate Benefactor of the AARS since its inception in 2005.



## Industry News

**FDA approves Sol-Gel Technologies' and Galderma's Epsolay for rosacea.** April 25, 2022. DermWire, Practical Dermatology. <https://practicaldermatology.com/news/fda-approves-sol-gel-technologies-and-galdermas-epsolay-for-rosacea?c4src=news-landing:feed>

The FDA has approved Sol-Gel Technologies' Epsolay, a proprietary cream formulation of benzoyl peroxide, 5%, for the treatment of inflammatory lesions of rosacea in adults. The benzoyl peroxide in Epsolay is encapsulated within silica-based patented microcapsules. The silica-based shell is designed to slowly release benzoyl peroxide over time to provide a favorable efficacy and safety profile. The approval is supported by data from two positive, identical Phase

3 randomized, double-blind, multicenter, 12-week, clinical trials that evaluated the safety and efficacy of Epsolay compared to vehicle in people with inflammatory lesions of rosacea (N = 733). The coprimary endpoints in both trials were the proportion of subjects with treatment success and the absolute change from baseline in lesion counts at Week 12. Epsolay was more effective than vehicle cream on the co-primary efficacy endpoints starting from 4 weeks of treatment in both trials. With Epsolay treatment, inflammatory lesions of rosacea were reduced by nearly 70% by the end of both 12-week trials vs. 38-46% with vehicle. Nearly 50% of subjects were 'clear' (IGA=0) or 'almost clear' (IGA=1) at 12 weeks vs. 38-46% with placebo. Post-hoc analysis of lesion count and IGA success at Week 2 confirmed a significantly greater treatment effect for Epsolay relative to vehicle as early as Week 2. In the open-label extension, 73% of subjects were 'clear' (IGA=0) or 'almost clear' (IGA=1) at 52 weeks (N = 547). Sol-Gel has granted exclusive rights to commercialize Epsolay in the US to Galderma Holding SA. "Having Epsolay approved by the FDA is a watershed moment for the 16 million people in the United States suffering from rosacea," says Alon Seri-Levy, PhD, Chief Executive Officer of Sol-Gel. "Based on the robust clinical data, we believe that EPSOLAY has the potential to change the treatment landscape. We are proud to have Galderma as our partner to launch this drug since Galderma has an unparalleled track record of introducing innovative drugs in the United States' rosacea market." Neal D. Bhatia, MD, dermatologist at Therapeutics Clinical Research in San Diego, CA and Chief Medical Editor of *Practical Dermatology* magazine commented, "There is poor adherence of my patients to current treatments for inflammatory rosacea and I look forward to being able to prescribe EPSOLAY to them, primarily because Epsolay has demonstrated outstanding and rapid efficacy results and also because Epsolay has been shown to be well-tolerated, both of which are important factors to ensure patients' satisfaction." Galderma is committed to delivering innovation in dermatology so that healthcare professionals and their patients have the products they need," says Baldo Scassellati Sforzolini, MD, PhD, Global Head of Research & Development at Galderma. "People with rosacea experience a significant burden of disease with diminished quality of life and the approval of EPSOLAY represents an important advancement for those who are living with rosacea. We are pleased to be able to launch EPSOLAY and look forward to bringing this new treatment option to the United States."

## New Medical Research

**Autologous platelet-rich plasma 'fluid' versus 'gel' form in combination with fractional CO<sub>2</sub> laser in the treatment of atrophic acne scars: A split-face randomized clinical trial.** Gawdat HI, El-Hadidy YA, Allam RSHM, Abdelkader HA. *J Dermatolog Treat.* 2022 Apr 22;1-10. doi: 10.1080/09546634.2022.2067816. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35435087/>

Background: The treatment of atrophic acne scars represents a therapeutic challenge. Recently, plasma gel has been introduced among treatment modalities. Objective: To compare the efficacy of platelet-rich-plasma 'fluid' versus 'gel' form combined with fractional CO<sub>2</sub> laser in the treatment of atrophic acne scars. Methods: Twenty-seven patients with atrophic acne scars were included. Treatment with fractional CO<sub>2</sub> laser plus plasma fluid/gel was randomly assigned to the right/left sides of the face. Clinical and Optical Coherence Tomography (OCT) assessments were scheduled at baseline, one month, and three months after the last session. Results: There was a significant improvement in clinical assessment scores at third-month follow-up on the plasma gel- and plasma fluid-treated sides compared to those at the first-month follow-up ( $p < .001$ ). Scar depth decreased significantly at third-month follow-up when compared to baseline on both plasma gel- and plasma fluid-treated sides ( $p < .001$ ). The numerical pain score was significantly lower on the plasma fluid-treated side compared to the plasma gel-treated side ( $p = .004$ ). Conclusion: The use of platelet-rich plasma in combination with fractional CO<sub>2</sub> laser, both in fluid and gel form, produced significant results in the treatment of atrophic acne scars. Patients reported an immediate more noticeable effect with plasma gel. However, the fluid injection was less painful.

**Spotting fake news: a qualitative review of misinformation and conspiracy theories in acne vulgaris.** O'Connor C, O'Grady C, Murphy M. Clin Exp Dermatol. 2022 Apr 18. doi: 10.1111/ced.15222. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35434841/>

Acne vulgaris is an extremely common disorder of the pilosebaceous unit, typically manifest as a highly visible facial and upper trunk dermatosis, with teenagers most frequently affected. This cohort is markedly susceptible to misinformation, given their impressionable age, distress regarding their appearance, and high internet usage. This study aimed to assess the content of acne-related misinformation available online. A formal review of Pubmed and informal Google search, using the terms 'acne' AND 'misinformation' OR 'disinformation' OR 'conspiracy theory' was performed. Key themes of acne-related misinformation included diet and other 'causes' of acne, non-conventional acne 'cures' and a distrust of conventional acne treatments. Websites promoting misinformation were frequently affiliated with companies selling products that promised to cure acne, often in a remarkably short time. Dermatologists should be aware of the nature of acne-related misinformation available online and be prepared to counter it with scientific principles and facts.

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**Vitamin D level in patients with moderate to severe acne: A case-control study combined with prospective study following oral Isotretinoin treatment.** Shrestha S, Agrawal S, Lamsal M. J Cosmet Dermatol. 2022 Apr 16. doi: 10.1111/jocd.14996. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35429216/>

Background: Vitamin D may have an important role in the pathogenesis of Acne Vulgaris (AV) as it has an immunomodulatory effect and regulates the proliferation and differentiation of keratinocytes. Oral isotretinoin used in the management of moderate-to-severe acne binds to the retinoid receptor which can form a heterodimer with vitamin D receptor (VDR) and may decrease the level of vitamin D by increasing catabolism. Two studies published so far investigating the effect of oral Isotretinoin on serum vitamin D level are contradictory to one another. Objective: This study aimed to compare the serum vitamin D levels in patients with moderate-to-severe acne and age-sex matched healthy controls and to determine the serum level of vitamin D in patients with moderate-to-severe acne following three months of oral isotretinoin treatment. Methods: A total of 120 patients with moderate-to-severe acne and 90 age age-sex-matched healthy controls were enrolled in the study. The patients were treated with oral isotretinoin at 0.50-0.75 mg/kg/day and serum vitamin D was measured at baseline and 3 months after the treatment. Result: Serum vitamin D was insufficient and deficient in 90.50% of cases in comparison to 43.33% of controls (P=0.001). Serum vitamin D had an inverse correlation with the severity of acne. Following 3 months of oral isotretinoin, there was no significant change in serum vitamin D level (P=0.127). Conclusion: Vitamin D was low in patients with moderate-to-severe acne in compared to control. Vitamin D level didn't change with short term therapy with oral Isotretinoin.

**Acne scar treatment using combination therapy; subcision and human autologous fibroblast injection.** Nilforoushzadeh MA, Heidari-Kharaji M, Alavi S, et al. J Cosmet Dermatol. 2022 Apr 15. doi: 10.1111/jocd.14988. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35426216/>

Background: Acne scars treatment are a problem for both the dermatologist and the dermatologic surgeon. Many therapies have been advanced to improve acne scars over the past years. Nevertheless, they were often related to adverse side effects like hyperpigmentation. These combination therapy using subcision and autologous fibroblast injection, can provides a better technique for the acne scars treatment. Material and methods: In this study, we describe 9 patients with the age of 25 to 48 and rolling acne scars (moderate to severe) that treated with combination therapy using subcision (cannula, 18 gauge) and autologous fibroblast injection. Finally, before and 6 months after the final injection the patients' biometric characteristics evaluated by, Visioface 1000D and Mexameter and a skin ultrasound imaging system. Results: The results show significant improvement on the acne scars in the patients. The

Visioface results showed that the size and number of skin pores and spots were reduced after combination therapy. Also, the results of skin ultrasonography exhibited denser skin layers both in the epidermis and dermis. Conclusion: In summary, combination therapy of autologous fibroblast injection and subcision can be considered as a new alternative, safe and useful method for acne scar treatment.

**Variability of over-the-counter spending on acne treatment across race and demographic characteristics.**

Shah N, Ghatnekar S, Nambudiri VE. Clin Dermatol. 2022 Apr 13;S0738-081X(22)00051-7. doi: 10.1016/j.clindermatol.2022.02.017. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35429623/>

Acne is a common skin condition that is associated with long-term dermatologic and psychological morbidities if left untreated. In this study, a survey was distributed via Amazon Mechanical Turk to evaluate for out-of-pocket costs associated with over the counter (OTC) acne treatment. 515 respondents with acne were included of whom 84% used OTC products, spending on average \$121.99±115.69 in the past year. Additionally, on average Black respondents spent more on OTC products than other races, and there was a positive correlation between income and expenditure on OTC products. Consistent with literature, we find that many patients self-treat with multiple OTC products and out of pocket costs are significant.

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**Intense pulsed light therapy improves acne-induced post-inflammatory erythema and hyperpigmentation: A retrospective study in Chinese patients.** Wu X, Wang X, Wu X, et al. Dermatol Ther (Heidelb). 2022 Apr 12. doi: 10.1007/s13555-022-00719-9. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35415801/>

Introduction: Post-inflammatory erythema (PIE) and post-inflammatory hyperpigmentation (PIH) are the most common acne-related sequelae with no effective treatments. By combining different cut-off filters, intense pulsed light (IPL) therapy can effectively treat these conditions with few side effects. While the safety and effectiveness of IPL for treating post-burn hyperpigmentation is well known, there is little evidence for its benefits for acne-related PIH. In this article, we evaluate the efficacy and safety of IPL for the treatment of acne-related PIE and PIH. Methods: This retrospective study evaluated 60 patients with more than 6 months of PIE and PIH treated by the same IPL device and similar protocols. The treatment included three to seven sessions at 4-6-week intervals, and three cut-off filters (640 nm, 590 nm and 560 nm) were used sequentially in each session. Using the Global Aesthetic Improvement Scale (GAIS), Cardiff Acne Disability Index (CADI), and Erythema Assessment Scale (EAS), patients were evaluated on the basis of their facial photographs. The facial brown spots and red areas were visualized and analyzed using the VISIA-CR system. Six months after the last treatment, the patients were assessed for acne relapse or any side effects. Please check and confirm that the authors and their respective affiliations have been correctly processed and amend if necessary. Checked and confirmed. No further corrections. Results: On the basis of the GAIS, 49 of 60 patients (81.7%) showed complete or partial clearance of erythema and hyperpigmentation. The CADI and EAS scores showed significant improvement ( $p < 0.01$ ) after IPL treatment compared with pre-treatment. A significant reduction ( $p < 0.01$ ) in the facial brown spots and red areas was seen after IPL treatment. While no long-term side effects were reported, seven patients (11.7%) experienced acne relapse at follow-up. Conclusion: IPL is an effective and safe treatment for acne-related PIE and PIH.

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**A randomized prospective study of low-dose isotretinoin alone and combination with salicylic acid and mandelic peel against acne tarda.** Dixit N, Jena A, Panda M, et al. J Cosmet Dermatol. 2022 Apr 7. doi: 10.1111/jocd.14973. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35388606/>

Background: Acne tarda (AT) is typically known as adult acne and most preferably affected 25-45 age groups.

Isotretinoin monotherapy is not effective and also produces side effects from long treatment. Aim: The present study assesses the effectiveness of combined treatment of oral isotretinoin with topical chemical peeling (20% salicylic and 10% mandelic acid known as SM peeling) by a comparative double-blind randomized single-center interventional open-label study. Materials and methods: A total fifty-eight participants AT outpatients (25-45 age-groups) attending for diagnosis in two groups and effectiveness of proposed combined treatments were determined at baseline and follow-up within 4 week intervals. Briefly group A (n=28) received 0.5 mg/kg of oral isotretinoin once daily for sixteen weeks and group B (n=30) received the same oral dose, addition with SM peeling every four weeks interval for sixteen weeks. After four weeks, treatment efficacy was assessed based on Michelson's acne severity index (MASI) and visual analog scale (VAS), further validated using statistical tools. Results: Based on MASI and VAS scores, combined treatment was significantly effective than the monotherapy. The pre- and post-treatment analyses of response to scarring, inflammatory components at baseline and at the end of treatment were also statistically significant with  $p > 0.008$ . Conclusion: The above investigation revealed that the combination of oral isotretinoin with SM peeling was highly effective and could be used as newer therapy against AT without any serious side effects.

**Treatment of refractory acne using selective sebaceous gland electro-thermolysis combined with non-thermal plasma.** Wu X, Yang Y, Wang Y, et al. J Cosmet Laser Ther. 2022 Apr 7;1-7. doi: 10.1080/14764172.2022.2050760. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35388729/>

Acne is one of the most common skin diseases whose disfiguring results may cause psychological problems. Despite of the various choices in the treatment of acne, new therapy with fewer complications and lower relapse rate is still in need. In this study, we aim to evaluate the clinical efficacy of a new therapy using selective sebaceous gland electro-thermolysis and non-thermal plasma (NTP) in refractory acne patients. Treatments were given at a monthly interval for three times. The last visit was set at 3 months after the third treatment. Thirty-six moderate to very severe acne patients were enrolled. All the patients got more than 50% clearance after the third treatment. The excellent response rate was 44% at 1 month after the third treatment and 50% at 3 months after the third treatment. Porphyrin and erythema values were significantly reduced after the third treatment. No irreversible complication was reported. Selective sebaceous gland electro-thermolysis combined with NTP can be a safe and effective new option in the treatment of acne.

**Prediction of antibacterial peptides against propionibacterium acnes from the peptidomes of achatina fulica mucus fractions.** Chalongsak S, E-Kobon T, Chumnanpuen P. Molecules. 2022 Mar 31;27(7):2290. doi: 10.3390/molecules27072290. <https://pubmed.ncbi.nlm.nih.gov/35408688/>

Acne vulgaris is a common skin disease mainly caused by the Gram-positive pathogenic bacterium, Propionibacterium acnes. This bacterium stimulates the inflammation process in human sebaceous glands. The giant African snail (Achatina fulica) is an alien species that rapidly reproduces and seriously damages agricultural products in Thailand. There were several research reports on the medical and pharmaceutical benefits of these snail mucus peptides and proteins. This study aimed to in silico predict multifunctional bioactive peptides from A. fulica mucus peptidome using bioinformatic tools for the determination of antimicrobial (iAMPpred), anti-biofilm (dPABBs), cytotoxic (ToxinPred) and cell-membrane-penetrating (CPPpred) peptides. Three candidate peptides with the highest predictive score were selected and re-designed/modified to improve the required activities. Structural and physicochemical properties of six anti-P. acnes (APA) peptide candidates were performed using the PEP-FOLD3 program and the four previous tools. All candidates had a random coiled structure and were named APAP-1 ori, APAP-2 ori, APAP-3 ori, APAP-1 mod, APAP-2 mod, and APAP-3 mod. To validate the APA activity, these peptide candidates were synthesized and tested against six isolates of P. acnes. The modified APA peptides showed high APA activity on three isolates. Therefore, our biomimetic mucus peptides could be useful for preventing acne vulgaris and further

examined on other activities important to medical and pharmaceutical applications.

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**Suppression of cutibacterium acnes-mediated inflammatory reactions by fibroblast growth factor 21 in skin.**

Yu Y, Shen Y, Zhang S, et al. *Int J Mol Sci.* 2022 Mar 25;23(7):3589. doi: 10.3390/ijms23073589.

<https://pubmed.ncbi.nlm.nih.gov/35408949/>

Cutibacterium acnes (*C. acnes*) is a common commensal bacterium that is closely associated with the pathogenesis of acne. Fibroblast growth factor 21 (FGF21), as a favorable regulator of glucose and lipid metabolism and insulin sensitivity, was recently shown to exert anti-inflammatory effects. The role and mechanism of FGF21 in the inflammatory reactions induced by *C. acnes*, however, have not been determined. The present study shows that FGF21 in the dermis inhibits epidermal *C. acnes*-induced inflammation in a paracrine manner while it functions on the epidermal layer through a receptor complex consisting of FGF receptor 1 (FGFR1) and  $\beta$ -Klotho (KLB). The effects of FGF21 in heat-killed *C. acnes*-induced HaCaT cells and living *C. acnes*-injected mouse ears were examined. In the presence of *C. acnes*, FGF21 largely counteracted the activation of Toll-like receptor 2 (TLR2), the downstream nuclear factor- $\kappa$ B (NF- $\kappa$ B), and mitogen-activated protein kinase (MAPK) signaling pathways induced by *C. acnes*. FGF21 also significantly reduced the expression of proinflammatory cytokines, including interleukin (IL)-1 $\beta$ , IL-6, IL-8, and tumor necrosis factor (TNF)- $\alpha$ . Taken together, these findings indicate that FGF21 suppresses *C. acnes*-induced inflammation and might be used clinically in the management and treatment of acne.

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**Effect of evening primrose oil supplementation on biochemical parameters and nutrition of patients treated with isotretinoin for acne vulgaris: A randomized double-blind trial.**

Kaźmierska A, Bolesławska I, Jagielski P, et al. *Nutrients.* 2022 Mar 23;14(7):1342. doi: 10.3390/nu14071342. <https://pubmed.ncbi.nlm.nih.gov/35405955/>

Background: Acne vulgaris is one of the most common skin diseases. One of the therapeutic options recommended for severe acne or acne that has not responded to previous therapies is isotretinoin. However, its use may lead to adverse changes in the serum lipid profile and increased levels of transaminases. In this study, we evaluated the effect of supplementation with evening primrose oil in acne vulgaris patients treated with isotretinoin on blood lipid parameters and transaminase activity. Methods: Study participants were randomly assigned to two treatments: conventional with isotretinoin (25 patients) and novel with isotretinoin combined with evening primrose oil (4 × 510 mg/day; 25 patients) for 9 months. Results: Compared to isotretinoin treatment, isotretinoin treatment combined with evening primrose oil had a positive effect on TCH concentrations (mean: 198 vs. 161,  $p < 0.001$ ), LDL (95.9 vs. 60.2,  $p < 0.001$ ), HDL (51.0 vs. 48.0,  $p < 0.001$ ), TG (114 vs. 95.0,  $p < 0.001$ ), ALT (24.0 vs. 22.0,  $p < 0.001$ ), and AST (28.0 vs. 22.0,  $p < 0.001$ ), but had no effect on the energy and ingredient content of the diets ( $p > 0.05$ ) after treatment. Conclusion: Evening primrose oil was found to have beneficial effects on lipid profiles and transaminase activity during isotretinoin treatment. However, longer studies are needed to make more reliable decisions regarding the use of evening primrose oil and its safety in clinical practice. The evening primrose oil treatment group also showed a reduction in dietary energy due to a reduction in dietary protein and carbohydrates.

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**C. acnes qPCR-Based Antibiotics Resistance Assay (ACQUIRE) reveals widespread macrolide resistance in acne patients and can eliminate macrolide misuse in acne treatment.**

Zhang J, Yu F, Fu K, et al. *Front Public Health.* 2022 Mar 18;10:787299. doi: 10.3389/fpubh.2022.787299. eCollection 2022.

<https://pubmed.ncbi.nlm.nih.gov/35372231/>

Background: Macrolides have been widely used to treat moderate-to-severe acne for more than 50 years. However,

the prevalent antibiotic resistance of *Propionibacterium acnes*, along with the absence of clinically available resistance tests, has made macrolide misuse a frequent occurrence around the globe, with serious consequences. Objective: We developed *Cutibacterium acnes* quantitative PCR (qPCR)-based antibiotics resistance assay (ACQUIRE) to enable fast and accurate detection of *C. acnes* macrolide resistance in clinical settings, representing an opportunity to administer antibiotics more wisely and improve the quality of care. Methods: A cross-sectional observational study (n = 915) was conducted to probe into the macrolide resistance of *C. acnes* in patients with acne. Results: The high sensitivity of ACQUIRE enabled us to reveal a much higher *C. acnes* 23S recombinant DNA (rDNA) point mutation rate (52%) and thus a higher macrolide resistance (75.5%) compared to previous reports. Carriage of *ermX* gene was discovered on 472 (53%) subjects, which concurs with previous studies. Conclusion: The macrolide resistance of *C. acnes* is much higher than previously reported. Integrating ACQUIRE into acne treatment modalities may eliminate macrolide misuse and achieve better clinical improvements.

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## Clinical Reviews

**Nano-therapeutics to treat acne vulgaris.** Chakraborty N, Narayanan V, Gautam HK. Indian J Microbiol. 2022 Jun;62(2):167-174. doi: 10.1007/s12088-022-01001-4. Epub 2022 Jan 29.

<https://pubmed.ncbi.nlm.nih.gov/35462720/>

Nanotechnology is a novel approach to dermatologic treatment. Nanomaterials are materials typically defined as less than 100 nm in size. As this size approaches molecular dimensions, the chemical and physical properties vastly change due to a relative increase in surface area to volume ratio. Unique and altered properties ensue, such as carbon becoming an electrical conductant in the nano form, and glass becoming a liquid. The interaction of nanoparticles with biota likewise changes. Novel therapeutics may be possible with the use of nanomaterials. Advantages of nanoparticles include the ability to overcome microbial resistance and potentially induce immunomodulatory effects. Engineered nanomaterials or the development of nano-therapeutics with photo-induced antibacterial propensity and immunomodulatory activities has the potential to open new prospects for the treatment of ubiquitous cutaneous diseases, such as acne vulgaris.

**Non-conventional therapeutical approaches to acne vulgaris related to its association with metabolic disorders.** Bungau SG, Tit DM, Vesa CM, et al. Eur J Pharmacol. 2022 May 15;923:174936. doi: 10.1016/j.ejphar.2022.174936. Epub 2022 Apr 1. <https://pubmed.ncbi.nlm.nih.gov/35378101/>

The ever-increasing frequency of metabolic syndrome (MetS) is still a major challenge of the public health care system, worldwide. In recent years, researchers have been drawn to the uncommon (at first look) link between skin illnesses and MetS. Because of the pro-inflammatory mechanisms and insulin resistance (IR) that are upregulated in metabolic syndrome, many skin disorders are correlated to metabolic dysfunctions, including acne vulgaris. A comprehensive understanding of the link between MetS and acne vulgaris may contribute to the development of new treatment strategies. The current review focuses on dietary and therapeutic interventions and assesses the effect of various approaches such as improving diet by avoiding certain food products (i.e., milk and chocolate) or increasing the intake of others (i.e., food products rich in omega-3 fatty acids), metformin administration, therapy with plant extracts, plant essential oils, and probiotic supplementation on the improvement of certain acne vulgaris severity parameters. These therapeutic approaches, when combined with allopathic treatment, can improve the patients' quality of life.

**Photodynamic therapy in the treatment of rosacea: A systematic review.** Li A, Fang R, Mao X, Sun Q. *Photodiagnosis Photodyn Ther.* 2022 Apr 22;102875. doi: 10.1016/j.pdpdt.2022.102875. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35470124/>

Objective: To systematically review the efficacy of photodynamic therapy (PDT) in the treatment of rosacea. Methods: PubMed, Embase, and Cochrane Library databases were searched for articles published by February 5, 2022, using "photodynamic therapy" and "rosacea" as the keywords. Results: Nine studies were included in the review. The number of patients varied from 1 to 30 in each study, with ages ranging from 18 to 76 years. Methyl aminolevulinate (MAL) and aminolevulinic acid (ALA) were used as the photosensitizer, and red light, blue light, intense pulsed light (IPL), long-pulsed dye laser (LPDL), pulsed dye laser (PDL), and tungsten lamp were used as the light or laser source. The follow-up time ranged from one month to 25 months. Most of the studies showed a satisfactory clinical response, and the side effects were tolerant and temporary. Conclusion: Current studies have provided preliminary evidence that PDT is an efficient and safe therapy in treating rosacea. However, rigorous randomized control trials (RCTs) with a larger sample size and longer follow-up time are warranted to verify the certain curative effects of PDT in treating rosacea and explore the most appropriate treatment schedule.

**Phytoconstituents loaded nanomedicines for the management of acne.** Qadir A, Ullah SNMN, Gupta DK, Khan N. *J Cosmet Dermatol.* 2022 Apr 18. doi: 10.1111/jocd.14999. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35435308/>

According to epidemiological data, a large percentage (80-90%) of adolescents suffer from acne vulgaris and approximately 30% of them need treatment. Possible outcomes of the inflammatory acne lesions are acne scars which, although they can be treated in several ways, may have a negative psychological impact on social life and relationships. There are three levels of acne: mild, moderate, and severe. The main types of acne scars are atrophic and hypertrophic scars. The pathogenesis of acne scarring is still not fully understood, but several hypotheses have been proposed. Nanotechnology-based nanomedicines provide a great coincidental for the enhancement in the efficacy and safety of pharmaco-therapeutic agents for acne. In this review, we discuss the phytoconstituent that are natural compounds present in plants extensively used for anti-acne activity. Phytochemicals target cytokines signaling pathways and thus exhibit their anti-acne activity. We further outline the advantages of loading phytoconstituents as a drug in nanocarriers such as emulsion, niosomes, SLN, and nanocrystal for better and improved topical treatment. This review is mainly focused on the usage of herbal nanomedicines in acne, nano delivery carriers used in the delivery of phytoconstituents with an improved therapeutic profile and reduced toxicity. In recent years, phytoconstituents showing their anti-acne potential, and Phytoconstituents loaded based nanomedicines have high treatment potential in the management of acne.

**Microneedling monotherapy for acne scar: Systematic review and meta-analysis of randomized controlled trials.** Shen YC, Chiu WK, Kang YN, Chen C. *Aesthetic Plast Surg.* 2022 Apr 14. doi: 10.1007/s00266-022-02845-3. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35426044/>

Introduction: Acne scarring, formed by the deposition of collagen following inflammatory acne, not only represents a cosmetic problem but also poses a psychological health risk to patients. As microneedling has become a common treatment for acne scarring, an increasing number of studies have compared the efficacy and safety of microneedling. In this study, we conducted a meta-analysis of randomized controlled trials (RCTs) comparing microneedling with other treatments. Method: Three databases, namely Embase, PubMed, and Cochrane library, were searched until June 20, 2021, for RCTs only. Studies using microneedling in both treatments were excluded. Results: Twelve studies, totaling 414 participants, were included in our meta-analysis. For objective scar improvement, the pooled estimate

analysis of the first group, treated with microneedling without radiofrequency, yielded a mean difference of 0.42 (95% CI-0.12-0.73%) with a significant difference at the 5% significance level. The second group, treated with fractional radiofrequency microneedling, exhibited no significance at the 5% significance level. Regarding subjective satisfaction, most results exhibited no significant difference between microneedling and other treatments. Although no case of secondary scarring or infection was reported in our study, the pooled result of postinflammatory hyperpigmentation was significant at the 5% significance level and preferred microneedling treatment. Conclusion: Microneedling without radiofrequency achieved superior results in terms of scar improvement. No form of microneedling caused postinflammatory hyperpigmentation-an advantage in acne scar treatment. Thus, microneedling is a favorable choice for the treatment of acne scarring. Level of evidence iii: This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors [www.springer.com/00266](http://www.springer.com/00266).

**Eczema herpeticum following skin microneedling plus platelet-rich plasma therapy in a patient with atrophic acne scars.** Wu R, Leng M, Sa Q, et al. Clin Cosmet Investig Dermatol. 2022 Apr 13;15:653-655. doi: 10.2147/CCID.S359618. eCollection 2022. <https://pubmed.ncbi.nlm.nih.gov/35444444/>

With the rapid development of minimally invasive cosmetic procedures, the group receiving minimally invasive cosmetic procedures is gradually on the rise. The adverse reactions or complications of minimally invasive cosmetic procedures also show an upward trend, but clinicians especially the cosmetic dermatologist should be identified and pay attention to the prevention and treatment in such reactions associated with minimally invasive cosmetic procedures in clinical practice. Platelet-rich plasma (PRP), which as a novel treatment option for acne scars, has shown good cosmetic results. Here, we report a case with eczema herpeticum following skin microneedling plus PRP therapy in a patient with atrophic acne scars.

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**Nutrition and acne, hidradenitis suppurativa, and isotretinoin.** Khan A, Chang MW. Clin Dermatol. 2022 Apr 7;S0738-081X(22)00050-5. doi: 10.1016/j.clindermatol.2022.04.001. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35398509/>

Acne vulgaris and hidradenitis suppurativa are chronic inflammatory, multifactorial skin disorders that often develop in adolescence and young adulthood. Both acne vulgaris and hidradenitis suppurativa can cause significant morbidity and psychologic distress, with a negative impact on the quality of life. The relationship between diet, acne, and hidradenitis suppurativa remains somewhat controversial; however, there is increasing evidence that high-glycemic diets, and consumption of milk and dairy products promote acne. Studies suggest that weight loss through dietary interventions or bariatric surgery and Brewer's yeast exclusion diets have the potential to ameliorate the signs of hidradenitis suppurativa. We review the role of diet in the pathogenesis, prevention, and treatment of hidradenitis suppurativa and acne vulgaris.

**Assessment of frequency of rosacea subtypes in patients with rosacea: A systematic review and meta-analysis.** Barakji YA, Rønstad ATM, Christensen MO, et al. JAMA Dermatol. 2022 Apr 6;e220526. doi: 10.1001/jamadermatol.2022.0526. Online ahead of print. <https://pubmed.ncbi.nlm.nih.gov/35385049/>

Importance: Four distinct rosacea subtypes have traditionally been recognized, but the frequency of these subtypes among patients with rosacea remains unknown. Objective: To assess the frequency of 4 rosacea subtypes. Data sources: This systemic review and meta-analysis included a search of 2 databases, PubMed and Embase, from inception of the databases to November 2, 2021. The search was filtered to include only studies of human participants published in English, French, and German. Study selection: Studies were screened independently by 2 of the authors

and were included if they were original with a sample size of 25 or more patients and reported absolute numbers or frequency of patients affected by rosacea subtypes. Studies that did not report sufficient data to calculate the proportions of subtypes were excluded. Data extraction and synthesis: Data extraction was performed independently and in duplicate by 2 of the authors, using the search term rosacea, according to the Preferred Reporting items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. The search term, objectives, and study protocol methods were defined before the study was initiated. A total of 292 studies were included for full-text assessment. Owing to the heterogeneity of the included studies, a random-effects model was used. Main outcome and measures: The main outcome was the proportion of patients with rosacea in each of the 4 major subtype groups defined by the 2002 National Rosacea Society classification system. Measures were absolute numbers or frequency of patients affected by each of the 4 rosacea subtypes. Results: A total of 39 studies examining 9190 patients with rosacea were included. The pooled proportion of erythematotelangiectatic rosacea was 56.7% (95% CI, 51.4%-62.0%), of papulopustular rosacea was 43.2% (95% CI, 38.8%-47.6%), of phymatous rosacea was 7.4% (95% CI, 6.1%-8.9%), and of ocular rosacea was 11.1% (95% CI, 6.7%-16.3%). Subtype distribution occurred equally among men and women except for phymatous rosacea, which was more prevalent in men. Studies from Africa showed the lowest proportion of erythematotelangiectatic rosacea. Differences in frequency of subtypes were observed when stratification by publication year was performed. Conclusion and relevance: In this systematic review and meta-analysis, differences were found in rosacea subtypes by patient sex and by continent of origin and publication year of included studies. Erythematotelangiectatic and papulopustular rosacea were the most prevalent subtypes, but data should be interpreted with caution. Future studies should use the phenotype-based rosacea approach.

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**Dermoscopy, reflectance confocal microscopy and optical coherence tomography features of acne: A systematic review.** Alma A, Sticchi A, Chello C, et al. *J Clin Med.* 2022 Mar 24;11(7):1783. doi: 10.3390/jcm11071783. <https://pubmed.ncbi.nlm.nih.gov/35407391/>

Noninvasive imaging techniques have recently outlined precise microscopic features of acne elementary lesions and accurate quantifications for disease severity staging and therapeutical efficacy follow-up. The aim of this review is to systematically describe current applications of dermoscopy, reflectance confocal microscopy (RCM), and optical coherence tomography (OCT) in acne vulgaris assessment and management. The study followed the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. We included studies conducted on human subjects with elementary lesions of acne vulgaris, reporting assessment of the lesions with dermoscopy, RCM, and/or OCT. At present there are few large studies regarding acne and noninvasive imaging techniques, representing the main limitation of this review. Clinical examination represents the first line in acne diagnosis and treatment. However, dermoscopy, RCM, and OCT are further tools that can improve acne classification, monitoring of treatment, and pathophysiologic characterization. In the near future, dermoscopy, RCM, and OCT could become routinely used for the evaluation of acne vulgaris to provide a deeper knowledge of the disease and to guide the clinician in the prescription of tailored treatment protocols based on each patient's characteristics.

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**Acne and diet: a review of pathogenic mechanisms.** González-Mondragón EA, Ganoza-Granados LDC, Toledo-Bahena ME, et al. *Bol Med Hosp Infant Mex.* 2022;79(2):83-90. doi: 10.24875/BMHIM.21000088. <https://pubmed.ncbi.nlm.nih.gov/35468121/>

Acne is a chronic inflammatory disease of the pilosebaceous unit with multifactorial etiology. Abnormal proliferation of keratinocytes, altered sebum production, inflammation of the sebaceous follicle, and colonization by *Cutibacterium acnes* have been traditionally implicated. However, the diet has also been highlighted in the pathogenesis because

of its direct relation with some biochemical markers and the transcription of specific genes associated with sebaceous gland activity, inflammation, and bacterial proliferation, which together promote the development of the disease, affect the severity of the condition, and modify its response to treatment.

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