

Effective Treatments For Moderate To Severe Acne Vulgaris



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ABSTRACT

Acne Vulgaris is a universal skin condition that affects an estimated 650 million people globally. Acne vulgaris comes in different forms, thus, affects people in various distinctive ways, acne is a visible disease that has been proven to negatively impact the quality of one's life. Effectively, treatments are critical in helping against acne and in avoiding later complications, often associated with scarring and psychosocial issues. Hence, this imperative review will discuss the effectiveness of photodynamic therapy, benzoyl peroxide with adapalene, and isotretinoin, all of which contain acne-fighting properties, useful in the prevention of acne formation. This review underlines the critical findings, that benzoyl peroxide coupled with adapalene, successfully work at reducing acne lesions. Additionally, photodynamic therapy aids in improving inflammatory acne and isotretinoin successfully treats stubborn and severe acne.

INTRODUCTION

- > 80% of Americans have experienced acne vulgaris at some point in their lives, 20% of which suffered from severe acne.
- > Acne vulgaris is the formation of comedones, papules, pustules and nodules/cysts resulting from an obstruction and inflammation of pilosebaceous units such as, hair follicles and their accompanying sebaceous glands.
- o A, adapalene
- o BPO, benzoyl peroxide
- o IGA, Investigator's Global Assessment
- > Acne can be present on the face, chest, back, neck, and shoulders amongst people of varying ages, races, and genders.
- > Over-the-counter treatments are best for mild to moderate acne and consist of face cleansers, creams, and facial gels. Though prescribed medications are more effective for severe acne and consist of oral medications, antibiotics, and oral contraceptives.
- > Photodynamic therapy, benzoyl peroxide coupled with adapalene, and isotretinoin have strong chemical properties that target and prevent new and reoccurring acne, all of which have been proven to better treat moderate to severe acne vulgaris.

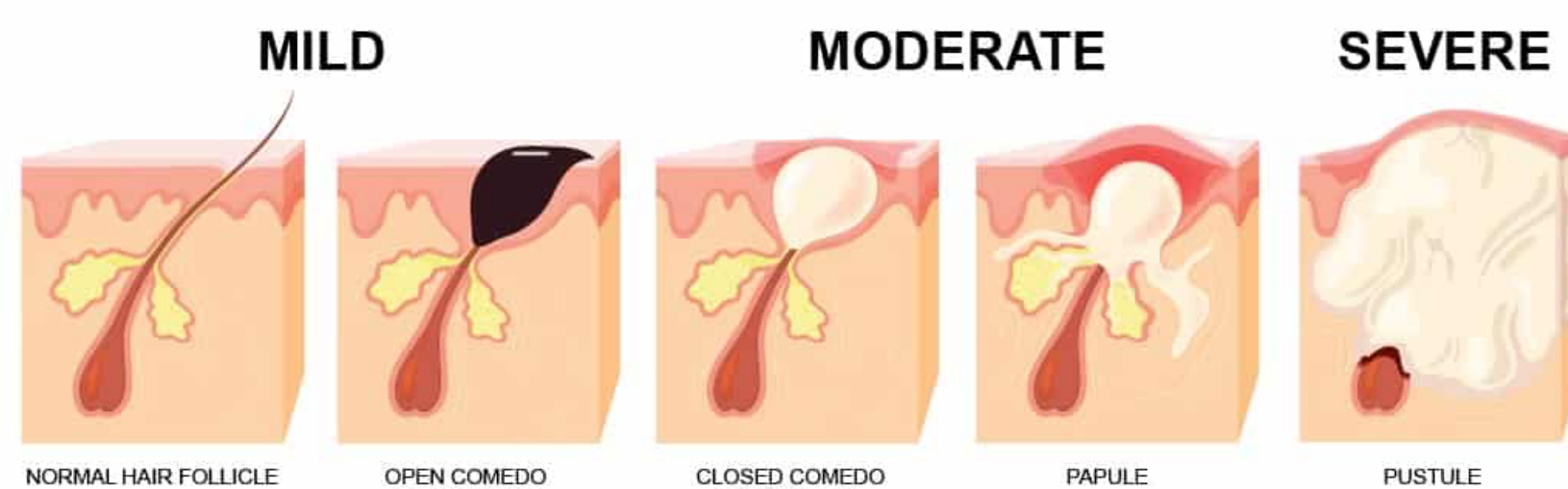


Figure 1. Types of acne (Miraculum 2022).

BENZOYL PEROXIDE & ADAPALENE

- > Benzoyl peroxide an antimicrobial, contains antiseptic, oxidizing agents, and anti-inflammatory properties that help to reduce propionibacterium acnes--a gram-positive bacterium that causes acne on the skin.
- > Adapalene a topical retinoid functions to reduce the formation of acne precursor lesions and limits the development of new lesions.
- > Benzoyl peroxide and adapalene combined are a powerful duo used to fight against moderate to severe acne.

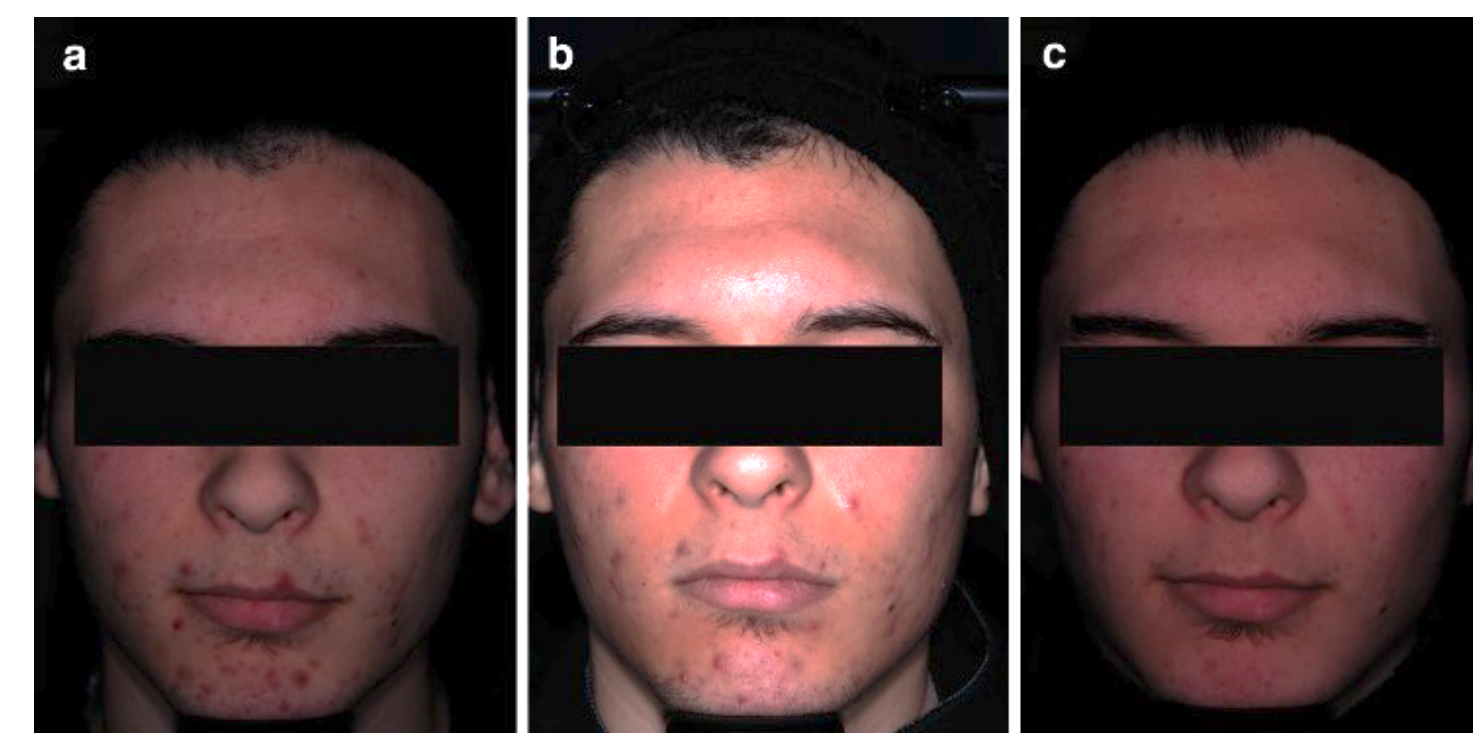


Figure 2. Photographs of subject in 0.3% A/BPO group with severe acne (IGA = 4) at (a) baseline, (b) week 1 and (c) week 12 with treatment success (IGA = 1, 'almost clear') (Gold et al. 2016).

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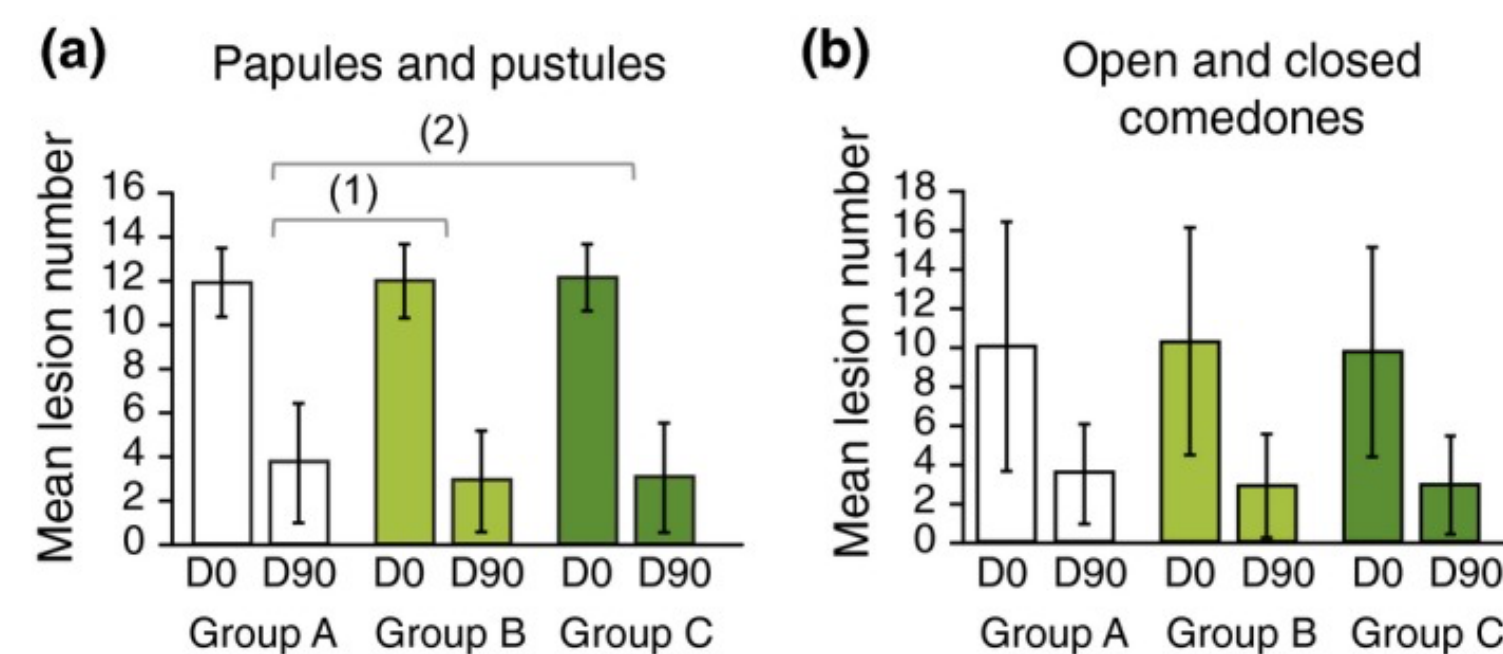


Figure 3. Mean acne lesion count at Day 0 and Day 90. Differences were statistically significant at Day 90 from Day 0 for all treatment groups. The difference was statistically in favor at Day 90 for Group B (1) and C (2) compared to Group A for papules and pustules ($P < 0.05$). Mean papules and pustules counts at D0: 11.94 for Group A, 12.04 for Group B, 12.18 for Group C. Mean papules and pustules counts at D90: 3.76 for Group A, 2.93 for Group B, 3.07 for Group C. Mean of the deltas D90 vs. D0 are -8.18 for Group A, -9.11 for Group B, -9.11 for Group C (Bouloc et al. 2018).

PHOTODYNAMIC THERAPY

- > PDT is achieved by light activation of a photosensitizing agent and oxygen, forming reactive oxygen intermediates that irreversibly oxidize essential cellular components, causing apoptosis and necrosis.
- > PDT has consistently shown to improve acne, by reducing inflammatory acne lesions, inhibiting sebaceous gland activity and sebum excretion.
- > PDT is especially helpful for those who do not respond well to standard topical and oral acne medications.



Figure 4. Clinical photographs from a severe acne patient of grade IV according to the Pillsbury classification treated by 3 sessions of 5% ALA-PDT at baseline visit (A-C) and 8-week follow-up after the last therapy (D-F) (Ma et al. 2013).

ISOTRETINOIN

- > Isotretinoin treats severe nodulocystic acne and is recommended when all other acne medications or antibiotics have failed.
- > Potent prescription that must be taken under the close supervision of a dermatologist and pharmacist.
- > Reduces the size of oil glands in the skin and inhibits sebum production.
- > Helps in the reduction of bacteria present on the skin.
- > Slows down the production of skin cells inside pores which helps in the prevention of clogged pores and in reducing inflammation.

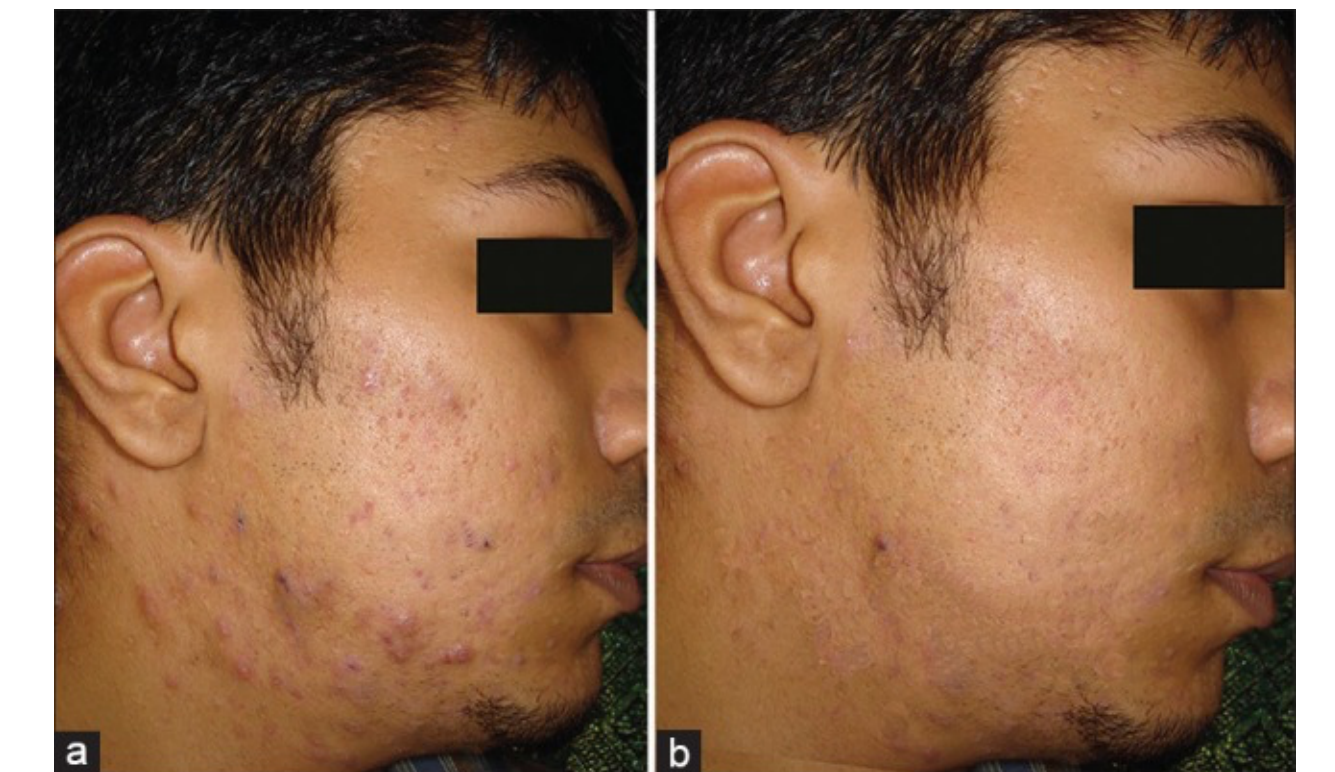


Figure 6. (a) Pre-treatment photograph, week 0 (b) Post-treatment photograph, week 12 (Rao et al. 2014).

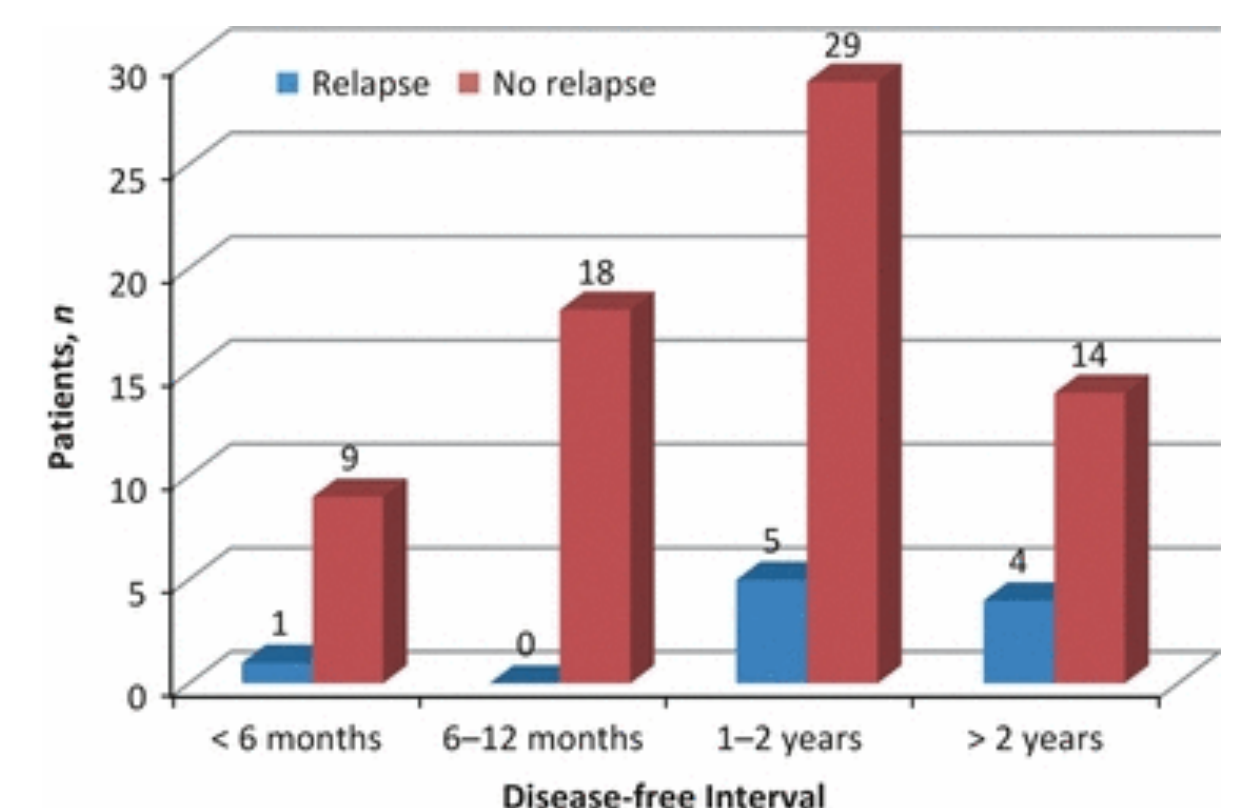


Figure 5. All patients ($n=18$) remained disease-free during the 6-12-month interval; 85.3% ($n=29$) remained disease-free during the 1-2-year interval; and 77.8% ($n=14$) reported no disease over a follow-up of >2 years (Cryunik et al. 2012).

CONCLUSION

- > PDT is beneficial for people who suffer from moderate to severe acne as it provides long-term results and very few side effects.
- > Benzoyl peroxide with adapalene shows a significant improvement on the skin due to its role in minimizing acne breakouts and its role in reducing inflammation.
- > Isotretinoin consists of acne-fighting properties that help minimize oil glands leading to a potential permanent cure for acne lasting several years. Therefore, it is an ideal option to consider for cases with severe and stubborn acne.

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