EVOLUTION OF BENZOYL PEROXIDE: MICROENCAPSULATED 5% CREAM TO IMPROVE TOLERABILITY IN PAPULOPUSTULAR ROSACEA

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INTRODUCTION

- The ability of benzoyl peroxide (BPO) to clear the papules and pustules of rosacea was first identified in the early 1980s.[1] BPO has a long history of use in dermatology.
- BPO is a potent oxidizing agent with broad bactericidal activity which may help reduce inflammation. It has also been shown to kill demodex and to help promote skin cell turnover.[2-5]
- However, use of traditional BPO formulations is limited by the potential for cutaneous irritation (burning, dryness, edema, erythema), it may cause irritant contact dermatitis, and, rarely, allergic contact dermatitis (more common in patients with impaired skin barrier function).[6,7]
- Due to these factors, BPO has not been historically considered a first-line therapy for rosacea.
- BPO was recently formulated in a microencapsulated cream (E-BPO Cream 5%), in which BPO is entrapped within silica microcapsules which control the BPO release and may reduce the potential for irritation.

METHODS

- Sol-gel is a chemical process where a "gel" is formed by network growth from an array of colloidal particles dispersed in a liquid ("sol") under increasing viscosity, until a rigid mass is formed ("gel").[8]
- Silica shells control the rate at which the active ingredient, BPO, is released to the skin, allowing a therapeutic effect while optimizing tolerability.
- E-BPO has been formulated as a topical monotherapy for rosacea, as well as in combination with tretinoin for acne vulgaris.

Figure 1: Overview of Development of BPO in Dermatology

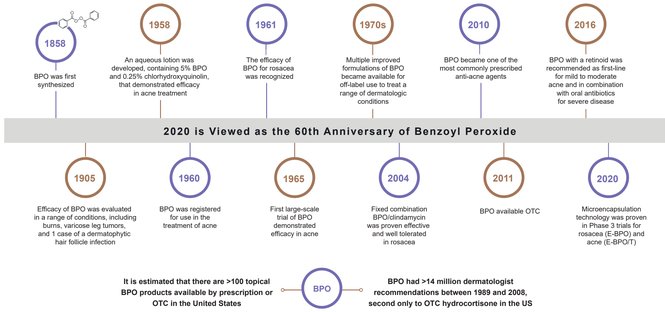
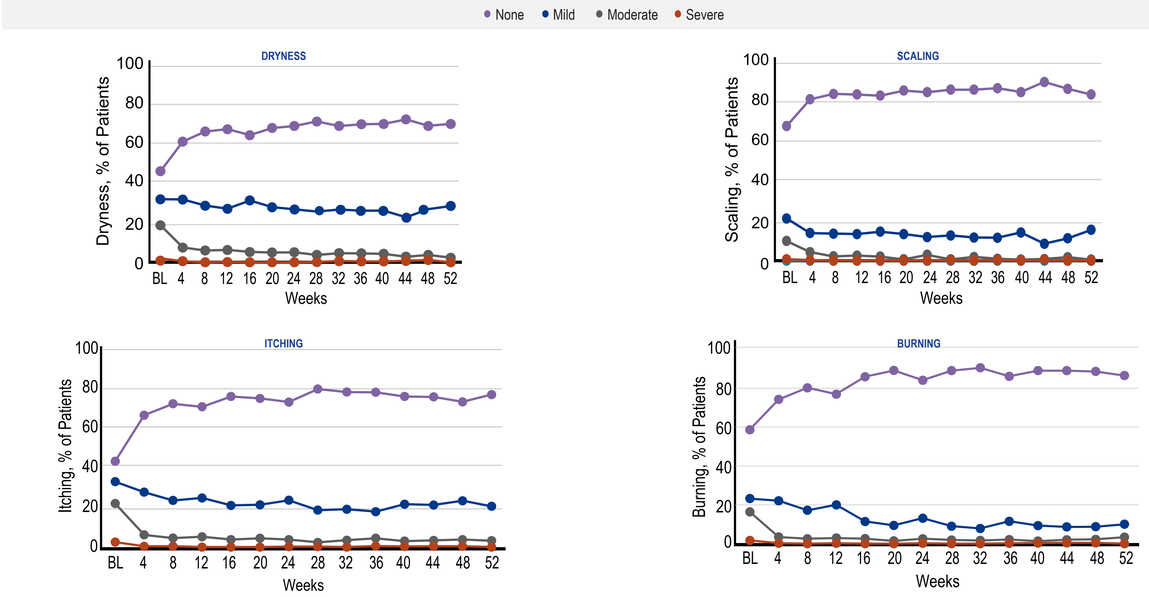


Figure 2. Long-term Study Tolerability



RESULTS

- The safety and efficacy of once-daily E-BPO 5% cream was evaluated in two 12-week clinical studies in patients with papulopustular rosacea (n = 733).
- E-BPO 5% cream had a rapid onset of action (more than 40% reduction of inflammatory lesions at week 2) and was significantly superior to vehicle meeting both coprimary endpoints (improvement in Investigators Global Assessment [IGA] and reduction in the number of inflammatory lesions).
- The proportion of patients rated clear/almost clear on IGA was 43.5% with E-BPO cream compared to 16.1% with vehicle (Study 1) and 50.1% vs 25.9%, respectively in Study 2.
- Absolute lesion counts decreased -17.4 with E-BPO cream vs -9.5 with vehicle (Study 1) and -20.3 vs -13.3, respectively in Study 2 ($P < .001$ for all).
- E-BPO cream 5% was well-tolerated with a similar safety profile as the vehicle.
- The mean cutaneous tolerability parameters (dryness, scaling, itching, and stinging/burning) of both E-BPO and vehicle stayed below 1 on a scale of 0 - 3 (0 = none, 1 = mild, 2 = moderate, 3 = severe) and were not statistically different.
- Reported treatment emergent adverse events (TEAEs) related to E-BPO 5% cream were rated mild or moderate.
- Related adverse events occurring in >1% of subjects included pain, erythema, pruritis, and edema all at the application site.

Long-Term Study Results

- A 40-week extension phase 3 clinical study was also conducted investigating the long-term safety and tolerability of E-BPO 5% cream (N = 547).
- E-BPO 5% cream remained well-tolerated over the course of 52 weeks.
- >95% of patients reported tolerability scores of "mild" or "none" and no new safety signals were identified.

SUMMARY

- BPO has a long history of use in dermatologic diseases but was historically limited by irritation.
- A novel formulation of microencapsulated BPO 5% (E-BPO) is FDA-approved for the treatment of inflammatory lesions of rosacea in adults.
- Microencapsulated BPO improves clinical outcomes for patients with rosacea by effectively reducing inflammatory lesions with good tolerability and a favorable safety profile.

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E-BPO=encapsulated benzoyl peroxide. Data on file, SGT 54-07.

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