POSTER 110

EFFICACY AND TOLERABILITY OF A 3-STEP ACNE SYSTEM CONTAINING A NOVEL SOLUBILIZED BENZOYL PEROXIDE LOTION FOR NORMAL TO DRY SKIN VERSUS A BENZOYL PEROXIDE/CLINDAMYCIN COMBINATION PRODUCT: AN INVESTIGATOR-BLIND, RANDOMIZED, PARALLEL-GROUP STUDY

Lawrence J Green, MD
The George Washington University
Washington, DC

INTRODUCTION

Benzoyl peroxide (BPO) is poorly soluble and formulations typically contain insoluble BPO macrocrystals which trap much of the BPO in the interior of the clusters, thus reducing its bioavailability. In addition, the macrocrystals may have difficulty passing into the follicles—likely limiting intrafollicular efficacy. Using patented technology to solubilize BPO, a novel solubilized 5% BPO lotion has been formulated for treating acne vulgaris in normal to dry skin. It is available as part of a 3-step system (together with a proprietary gentle cream cleanser and a therapeutic moisturizer containing 20% glycerin and 1% dimethicone) and has the potential to enhance follicular penetration and efficacy.

METHODS

Study design

- Investigator-blind, randomized study

Key inclusion criteria

- Mild to moderate facial acne:
  - 10-100 comedones
  - 17-40 papules + pustules + nodules
  - Up to 2 nodulocystic lesions
- Normal to dry skin
- 12-45 years old
- Willing to refrain from using other non-study acne medications, moisturizers, sunscreens, fragrances, aftershaves, or make-up on the face (except oil-free non-comedogenic make-up, mascara, eyeshadow, and lipstick were allowed)
- Willing to avoid excessive sun exposure and tanning booths

Key exclusion criteria

- Allergy to BPO, clindamycin, lincomycin, salicylic acid, sunscreen, or any ingredient in study products
- Facial sunburn at the baseline visit
- Papulopustular rosacea and other skin diseases on the face other than acne which could interfere with study evaluation
- Beard or sideburns that could interfere with study evaluation
- Uncontrolled systemic disease or known infection with human immunodeficiency virus
- History of regional enteritis, ulcerative colitis, or antibiotic-associated colitis
- Concurrent use of other products on the face
- Pregnancy, planning a pregnancy, or breastfeeding
- Participation in another investigational study in preceding 30 days

Washout periods

- 1 week for medicated facial cleansers
- 2 weeks for topical alpha-hydroxy acids, anti-acne medications, topical retinoids, topical and systemic antibiotics, and topical and systemic steroids
- 3 months for estrogens/birth control pills unless their use had already been stable for 3 months
- 6 months for systemic retinoids and facial cosmetic procedures

Treatment regimen

- Patients were randomly assigned to receive once-daily treatment with the 3-step acne system or 5% BPO/1% clindamycin in an emollient base for 4 weeks:
  - In the 3-step acne system group, patients washed their face twice daily with the proprietary cream cleanser and then applied the solubilized 5% BPO lotion to the entire face each morning and the proprietary therapeutic moisturizer each evening. The moisturizer could also be used on an as needed basis.
  - In the BPO/clindamycin group, patients washed their face twice daily with a specific over-the-counter cleansing wash and then applied the emollient-based 5% BPO/1% clindamycin prescription combination product to the entire face each morning. A specific over-the-counter moisturizer could be used as needed.

Outcome measures

- Comedo count
- Inflammatory lesion count (papules + pustules + nodules)
- Erythema, dryness, peeling, burning/stinging, itching (Table 1)
- Patient rating of effectiveness of treatment (Table 2)
- Patient rating of acne improvement (Table 2)
- Patient satisfaction with acne improvement (Table 2)

Statistical analyses

- The following statistical tests were used to evaluate between-group differences: a 2-sided Chi-square or Fisher's exact test for gender and race; a 2-sided t-test for age; a 2-sided t-test or Wilcoxon rank-sum test or ANCOVA or Rank ANCOVA for percent reduction in lesion counts; a Wilcoxon rank-sum test for Fitzpatrick skin types and patient ratings; and Rank ANCOVA or a Wilcoxon rank-sum test for tolerability assessments.
- A P value of <.05 was considered statistically significant.

RESULTS

Patients

- Of 22 patients enrolled:
  - 21 (95%) completed
  - 1 discontinued due to non-compliance.
- Patients had a mean age of 20 years and were predominantly:
  - Female (73%)
  - Caucasian (68% Caucasian, 18% Black, 5% Asian, 9% other)
  - Fitzpatrick skin type I (55% I, 14% II, 18% III, 9% IV, 5% V).
- There were no significant between-group differences in demographic details.

Efficacy

- Investigator ratings showed that both groups achieved comparable improvements in efficacy. At week 4, they had:
  - Reduced the comedo count by a mean of 38-48% (Figure 1)
  - Reduced the inflammatory lesion count by a mean of 63-66% (Figure 2).

TABLE 1 Scales for outcome measures reported by the investigator.

Score	Erythema	Dryness	Peeling	Burning/Stinging	Itching
0	**None** (May be minor discoloration)	**None**	**None**	**None**	**None**
1	**Mild** Light pink, noticeable	**Mild** Slight but definite roughness	**Mild** Slight peeling	**Mild** Light warm, tingling sensation, not really bothersome	**Mild** Occasional, slight itching
2	**Moderate** Pink-red, easily noticeable	**Moderate** Moderate roughness	**Moderate** Definitely noticeable peeling	**Moderate** Definite warmth, tingling/stinging sensation that is somewhat bothersome	**Moderate** Constant or intermittent itching that is somewhat bothersome
3	**Severe** Deep or bright red, may be warm to the touch	**Severe** Marked roughness	**Severe** Extensive peeling	**Severe** Hot tingling/stinging sensation which is disturbing normal activity	**Severe** Bothersome itching which is disturbing normal activity

TABLE 2 Scales for outcome measures reported by the patients.

Score	Patient Rating of Effectiveness of Treatment	Patient Rating of Acne Improvement	Satisfaction with Acne Improvement
0	—	**Poor/no change** No real improvement or noticeable difference in acne	—
1	**Ineffective**	**Fair** Some change or minor improvement	**Dissatisfied**
2	**Somewhat effective**	**Good** Visible difference in acne, but acne still present	**Indifferent**
3	**Effective**	**Very good** Very few acne lesions remaining	**Somewhat satisfied**
4	**Very effective**	**Excellent** Almost clear or clear of acne	**Satisfied**
5	—	—	**Very satisfied**

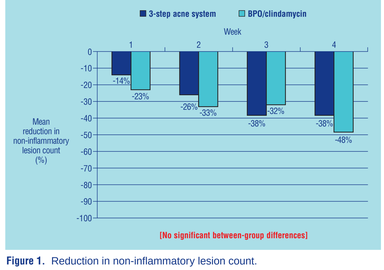

Figure 1. Reduction in non-inflammatory lesion count.

- Patient ratings showed that the 3-step solubilized 5% BPO lotion-based acne system was at least as effective as the emollient-based BPO/clindamycin combination. Between baseline and week 4, the acne system achieved a relatively greater (though non-significant) improvement in mean score for:
  - Effectiveness of treatment (from 2.5 to 3.4 with the acne system versus 2.5 to 2.9 with BPO/clindamycin) (Figure 3)
  - Improvement in acne (from 1.6 to 3.1 with the acne system versus 1.8 to 2.6 with BPO/clindamycin) (Figure 4).

Patient satisfaction

- Both regimens enhanced the mean patient ratings for satisfaction with acne improvement from "somewhat satisfied to satisfied" to "satisfied to very satisfied" (Figure 5).
- Nevertheless, the 3-step acne system group achieved a relatively greater improvement in mean satisfaction score (from 3.3 at baseline to 4.4 at week 4, versus from 3.6 to 4.1 in the BPO/clindamycin group) (Figure 5).

Tolerability

- Both regimens were generally well tolerated with mean levels of erythema, dryness, peeling, and burning/stinging consistently less than mild at all timepoints (Figure 6).

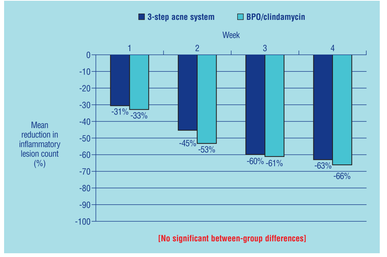

Figure 2. Reduction in inflammatory lesion count.

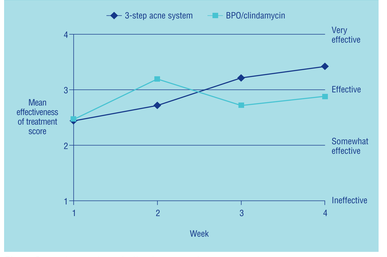

Figure 3. Patient rating of effectiveness of treatment.

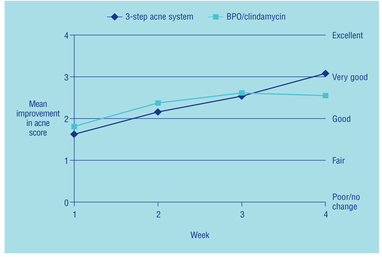

Figure 4. Patient rating of improvement in acne.

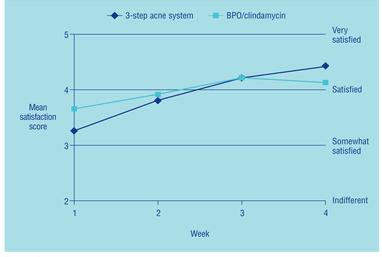

Figure 5. Mean patient satisfaction score.

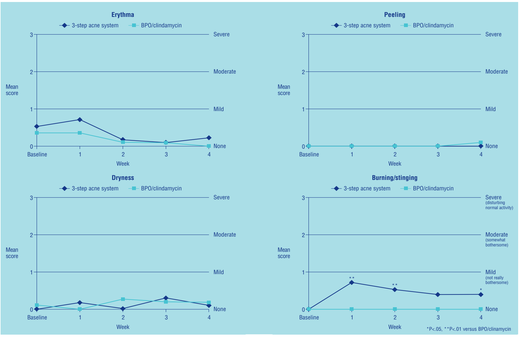

Figure 6. Mean score for erythema, dryness, peeling, and burning/stinging.

- Although burning/stinging was reported with the acne system (likely due to the BPO being solubilized), it was typically transient and resolved within a few minutes after application. Also, it occurred primarily in the first 2 weeks of therapy, lessened with continued treatment, and mean levels were less than "not really bothersome" (i.e. less than mild) at every timepoint.
- With both regimens, mean levels of itching were "none" at all timepoints.
- No treatment-related adverse events and no serious adverse events were reported.

CONCLUSIONS

After 4 weeks, once-daily use of the 3-step acne system (solubilized 5% BPO lotion plus proprietary cleanser and therapeutic moisturizer) offers comparable efficacy and patient satisfaction to an emollient-based combination BPO/clindamycin prescription product. The acne system achieves these comparable results despite its lack of an antibiotic.

DISCLOSURE

Supported by OMP, Inc.

Presented at the 66th Annual Meeting of the American Academy of Dermatology, February 1-5, 2008, San Antonio, TX.