POSTER 102

COMPARISON OF A 3-STEP ACNE SYSTEM CONTAI BENZOYL PEROXIDE VERSUS BENZOYL PEROXIDE, INVESTIGATOR-BLIND, RANDOMIZED STUDY (6-W

INTRODUCTION

Benzoyl peroxide (BPO) is poorly soluble and tends to aggregate into clusters that hinder its bioavailability and its follicular penetration. A 3-step acne system has been developed that contains a novel solubilized 5% BPO formulation together with a proprietary 2% salicylic acid cleanser and 2% salicylic acid toner. The aim of the solubilized BPO formulation is to enhance both the bioavailability and follicular penetration of BPO.[1,2] Early clinical data have shown that the solubilized 5% BPO formulation can result in a greater reduction in non-inflammatory lesion count in the early weeks of treatment than a combination BPO/antibiotic product.[3] We have now extended this research by evaluating the 3-step acne system in a larger group of patients and over a longer period of time.

METHODS

Study design

- Multicenter, investigator-blind, randomized, 10-week study

Inclusion criteria

- Mild to moderately severe facial acne vulgaris (10-100 non-inflammatory lesions, 17-60 inflammatory lesions, ≤ 2 nodulocystic lesions)
- 12-45 years of age
- Willingness to refrain from facial use of other acne medications, moisturizers/sunscreens (other than those provided in the study), fragrances, aftershaves, and make-up (except oil-free non-comedogenic make-up, mascara, eyeshadow, and lipstick were allowed)
- Willingness to avoid excessive exposure to the sun and the use of tanning booths

Exclusion criteria

- Allergy to benzoyl peroxide, clindamycin, lincomycin, salicylic acid, sunscreens, or ingredients in the study products
- Facial cosmetic procedure in the preceding 6 months
- Papulopustular rosacea and other skin diseases (apart from acne) which could interfere with study evaluation
- Facial sunburn at the baseline visit
- Beard or sideburns if this could interfere with study evaluation
- Uncontrolled systemic disease, infection with human immunodeficiency virus, history of regional enteritis, ulcerative colitis, or antibiotic-associated colitis
- Pregnancy, breastfeeding, or planning to become pregnant
- Participation in an investigational study in the preceding 30 days

Washout periods

- 1 week for medicated facial cleansers
- 2 weeks for topical alpha hydroxy acids and anti-acne medications other than topical retinoids and antibiotics
- 4 weeks for topical retinoids, topical and systemic antibiotics, and topical and systemic steroids
- 3 months for estrogen/birth control pills unless their use was stable during this period
- 6 months for systemic retinoids

Treatment regimen

- Patients randomly assigned to 10 weeks of facial treatment with one of the following:
  - The 3-step acne system (proprietary 2% salicylic acid cleanser twice daily + solubilized 5% BPO gel twice daily + proprietary 2% salicylic acid toner once daily)
  - Control cleanser twice daily + 5% BPO/1% clindamycin gel (pump formulation) twice daily.

Outcome measures

- Inflammatory acne lesion count (papules, pustules, and nodules)
- Non-inflammatory acne lesion count (comedones)
- Erythema, dryness, peeling, burning/stinging, and itching (Table 1)

Statistical analyses

- Target enrollment for the study was a total of 140 patients.
- Determination of sample size was not based on a power analysis approach. However, the target sample size was expected to be large enough to show a clinical difference between treatments.
- Between-group differences were evaluated using a:
  - Two-sided Chi-square test or Fisher's exact test for race
  - Two-sided t-test or Wilcoxon rank-sum test for age and lesion counts
  - Analysis of covariance for percent change from baseline in lesion counts
  - Wilcoxon rank-sum test for tolerability scores.

TABLE 1 Scales used to assess erythema, dryness, peeling, burning/stinging, and itching.

Score	Erythema	Dryness	Peeling	Burning/Stinging	Itching
0	**None** No erythema present (may be minor discoloration)	**None** No dryness present	**None** No peeling present	**None** No burning/ stinging	**None** No itching
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

RESULTS

Patients

- 105 patients have enrolled to date, with 69 (66%) having completed 6 weeks of the study at the time of this interim analysis.
- Overall, the patients were a mean of 20 years old (range, 12-44 years old) and 63% were 11-17 years old (referred to later as the pediatric subgroup).
- The majority of patients (84%) were white and had Fitzpatrick skin type II, III, or IV (28%, 34%, and 29%, respectively).
- Baseline demographics were comparable in both treatment groups.
- At baseline, patients had a mean of:
  - 52 non-inflammatory lesions (range, 18 to 122)
  - 29 inflammatory lesions (range, 17 to 59).

Efficacy in overall population

- The 3-step acne system was associated with a numerically greater percent reduction in non-inflammatory lesion count than BPO/clindamycin in the first 4 weeks of treatment (Figure 1), a mean of:
  - 27% vs. 19% at week 2 (NS)
    (range, 83% reduction to 112% increase vs. 92% reduction to 115% increase)
  - 40% vs. 30% at week 4 (NS)
    (range, 100% reduction to 26% increase vs. 100% reduction to 59% increase)
  - 35% vs. 36% at week 6 (NS)
    (range, 100% reduction to 43% increase vs. 100% reduction to 39% increase).
- The 3-step acne system was also associated with a numerically greater percent reduction in inflammatory lesion count from week 4 onward (Figure 2), a mean of:
  - 37% vs. 41% at week 2 (NS)
    (range, 100% reduction to 73% increase vs. 91% reduction to 35% increase)

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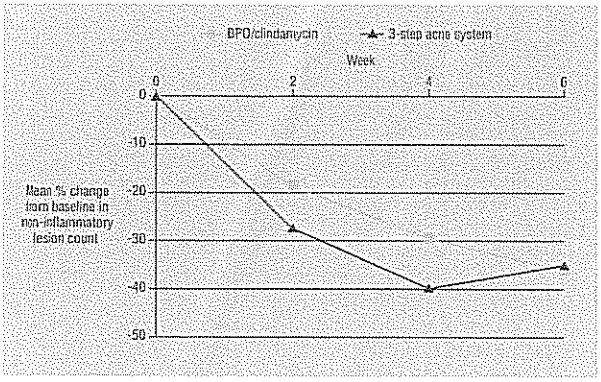

Figure 1. Reduction in non-inflammatory lesion count (overall population).

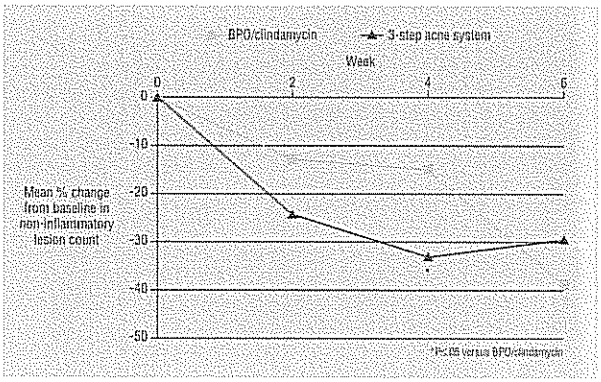

Figure 3. Reduction in non-inflammatory lesion count (pediatric population).

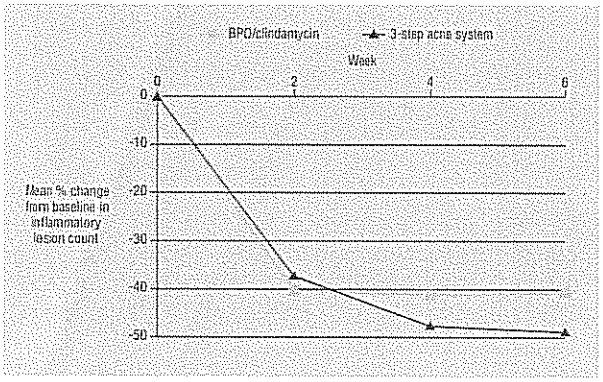

Figure 2. Reduction in inflammatory lesion count (overall population).

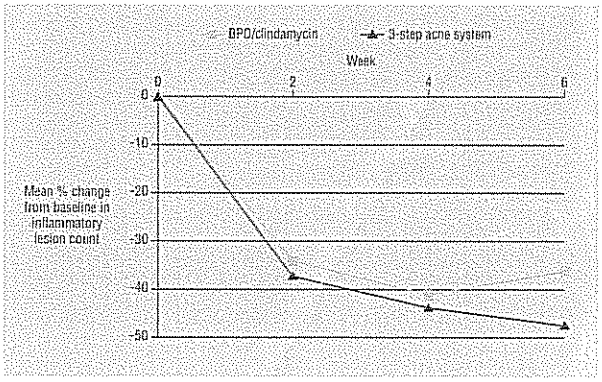

Figure 4. Reduction in inflammatory lesion count (pediatric population).

- 48% vs. 41% at week 4 (NS)
  (range, 100% reduction to 44% increase vs. 94% reduction to 136% increase)
- 49% vs. 41% at week 6 (NS)
  (range, 100% reduction to 38% increase vs. 96% reduction to 68% increase).

Efficacy in pediatric subgroup

- Efficacy in the subgroup of pediatric patients (n = 66, with 45 having completed 6 weeks of the study) was similar to that in the overall population with the added advantage of statistical significance in favor of the acne system for the reduction in non-inflammatory lesion count at week 4 (Figure 3).
- Thus, compared with BPO/clindamycin, the 3-step acne system reduced the non-inflammatory lesion count (Figure 3) by a mean of:
  - 24% vs. 13% at week 2 (NS)
    (range, 76% reduction to 112% increase vs. 92% reduction to 61% increase)
  - 33% vs. 15% at week 4 (P≤.05)
    (range, 88% reduction to 26% increase vs. 68% reduction to 59% increase)
  - 29% vs. 39% at week 6 (NS)
    (range, 76% reduction to 43% increase vs. 87% reduction to 39% increase).
- The acne system was also associated with a numerically greater percent reduction in inflammatory lesion count than BPO/clindamycin at all timepoints (Figure 4), a mean of:
  - 37% vs. 34% at week 2 (NS)
    (range, 100% reduction to 73% increase vs. 91% reduction to 35% increase)
  - 44% vs. 41% at week 4 (NS)
    (range, 100% reduction to 44% increase vs. 94% reduction to 26% increase)
  - 47% vs. 36% at week 6 (NS)
    (range, 100% reduction to 38% increase vs. 96% reduction to 45% increase).

Tolerability

- Both treatments were generally well tolerated with mean levels of erythema, dryness, peeling, burning/stinging, and itching less than mild in both groups at all timepoints (Figures 5-9). Nevertheless, at week 1, mean levels of dryness, peeling, and burning/stinging were significantly higher with the acne system than with BPO/clindamycin.
- Tolerability scores in the pediatric subgroup were similar to those in the overall population.

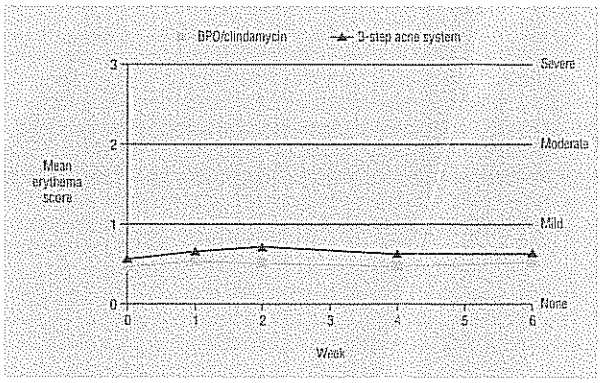

Figure 5. Mean erythema score (overall population).

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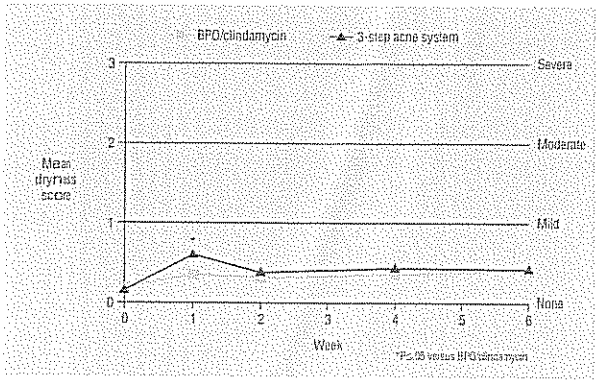

Figure 6. Mean dryness score (overall population).

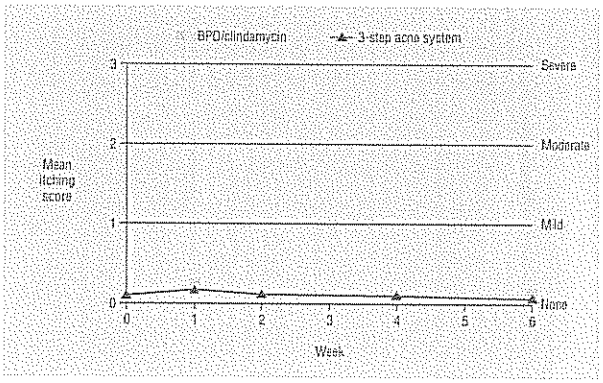

Figure 9. Mean itching score (overall population).

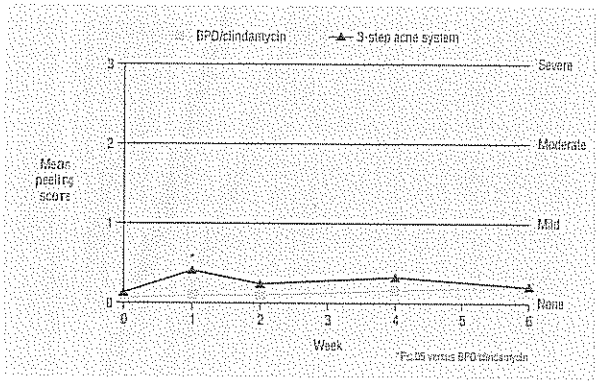

Figure 7. Mean peeling score (overall population).

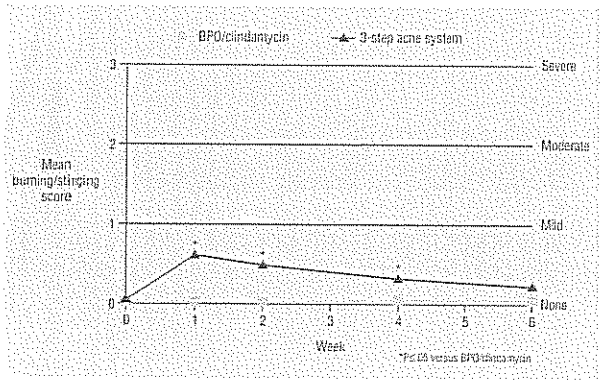

Figure 8. Mean burning/stinging score (overall population).

CONCLUSIONS

Compared with BPO/clindamycin, the 3-step acne system appears to offer the potential for greater improvements in acne in the early weeks of treatment in this interim analysis. It is likely that this improvement in efficacy is a result of the solubilized BPO formulation enhancing the bioavailability and follicular penetration of BPO. The unique solvent technology employed in the BPO formulation may aid in dissolving lipids in the comedones, which may play a role in enhancing efficacy in the early weeks of treatment.

The 3-step acne system offers an effective approach to treating acne with the added advantage of avoiding antibiotic exposure.

ACKNOWLEDGMENT

We gratefully acknowledge the contributions of the late Robert Loss, MD, as an investigator in this study.

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DISCLOSURE

Supported by OMP, Inc.

Presented at the Summer Academy Meeting 2008 of the American Academy of Dermatology, July 30-Aug 3, 2008, Chicago, IL.