A Comparison of Efficacy among Therapeutic Moisturizing Creams

CE Arrowitz,[1] LI Jiang,[2] PD Hino,[2] MJ Babcock,[3] TM Weber[1]

[1]Beiersdorf Inc., Wilton, CT; [2]Thomas J Stephens & Associates, Richardson, TX; [3]Colorado Springs Dermatology Clinic, Colorado Springs, CO

INTRODUCTION

- Xerosis is a highly prevalent condition, with moisturizers being the mainstay of treatment[1]
- There are many available moisturizing cream formulations to choose from, which vary in composition and efficacy
- Moisturization superiority can only be established from controlled, head-to-head comparative trial results
- The two studies reported here compared a single moisturizing cream formulation versus two market-competitor formulations when used by subjects with dry skin on the lower legs

OBJECTIVE

- To compare the efficacy of three therapeutic moisturizers in improving dry skin

METHODS

- Two double-blind, comparative, split-body studies were conducted

Study 1

Subjects

- 35 subjects aged 18–65 years with mild to severe xerosis on lower legs

Products

- Eucerin Advanced Repair Cream (Beiersdorf Inc., Wilton, CT; Moisturizing Cream A [MCA])
- Cetaphil Moisturizing Cream (Galderma, Fort Worth, TX; Moisturizing Cream B [MCB])

Study 2

Subjects

- 33 subjects aged 16–65 years with mild to severe xerosis on lower legs

Products

- Moisturizing Cream A (MCA)
- CeraVe Moisturizing Cream (L'Oréal, New York, NY; Moisturizing Cream C [MCC])

Study design

- Each subject served as their own comparator (split-body trial design)
- Products were randomly assigned to each lower leg and applied once daily for 10 days
- Subjects discontinued product use at Day 10 and participated in a 5-day regression phase

Assessments

- Expert clinical grading (dryness, roughness, flaking), skin hydration, and transepidermal water loss (TEWL) at baseline, Day 10, and regression Day 5
  – Clinical grading used a scale of 0 (none) to 9 (severe)
- Clinical grading parameters were statistically tested using Wilcoxon signed-rank test; Corneometer and TEWL comparisons were tested using paired *t*-test

RESULTS

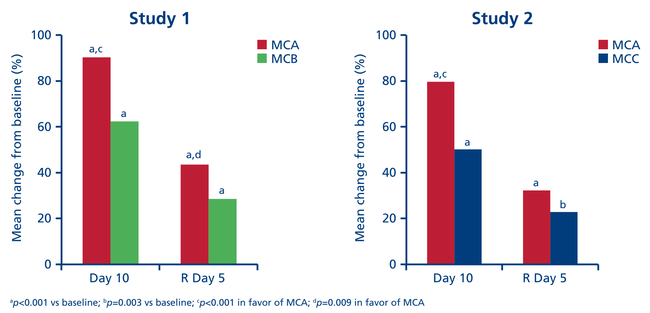
- All subjects enrolled completed the study (Table 1)

Table 1. Baseline demographics

	Study 1 (n=35)	Study 2 (n=33)
Sex, n (%)		
Female	23 (65.7)	21 (63.6)
Male	12 (34.3)	12 (36.4)
Fitzpatrick skin type, n (%)		
I	10 (28.6)	0
II	2 (5.7)	7 (21.2)
III	4 (11.4)	17 (51.5)
IV	18 (51.4)	4 (12.1)
V	1 (2.9)	5 (15.2)

- Corneometer results indicated that all three test products statistically improved skin hydration after 10 days of daily use (Figure 1)
- MCA showed statistically greater improvements in skin hydration compared with MCB and MCC at Day 10, and compared with MCB 5 days after discontinuation of product

Figure 1. Skin hydration improvement at Day 10, and 5 days after completion of treatment (regression Day 5)

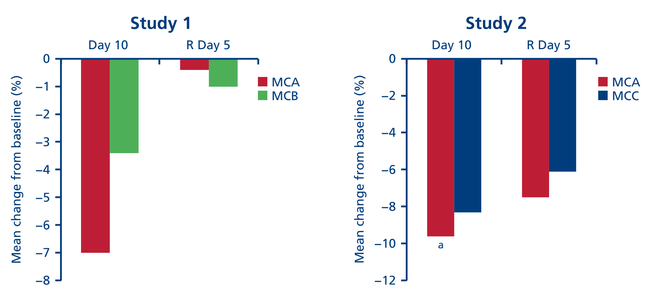


[a]$p<0.001$ vs baseline; [b]$p=0.003$ vs baseline; [c]$p<0.001$ in favor of MCA; [d]$p=0.009$ in favor of MCA

Skin hydration measured using a Corneometer

- In Study 1, no significant changes in TEWL were observed for either MCA or MCB at either time point (Figure 2)
- MCA significantly improved TEWL after 10 days compared with baseline in Study 2. MCC did not significantly improve TEWL relative to baseline (Figure 2)

Figure 2. Transepidermal water loss (TEWL) improvement at Day 10, and 5 days after completion of treatment (regression Day 5)

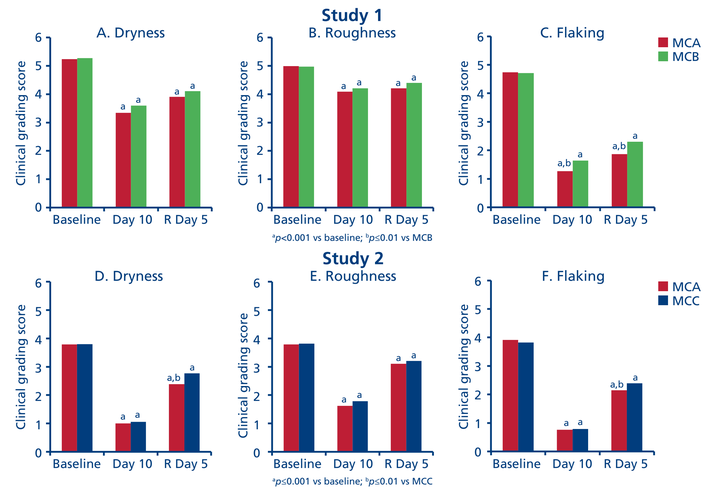


[a]$p<0.05$ vs baseline

Increased TEWL is an indication of a disrupted barrier function; decreased TEWL indicates improvement in barrier function. R, regression; TEWL, transepidermal water loss

- Clinical grading in Study 1 demonstrated that both MCA and MCB significantly improved dryness, roughness, and flaking of the lower legs after 10 days, which was maintained 5 days after discontinuation of treatment ($p<0.001$) (Figure 3 A–C)
- MCA significantly improved flaking compared with MCB ($p<0.05$)
- Clinical grading in Study 2 showed that both MCA and MCC significantly improved all three parameters from baseline and maintained these improvements 5 days after discontinuation ($p\leq0.001$) (Figure 3 D–E)
- MCA showed significantly greater maintenance of improvements in dryness and flaking at regression Day 5 compared with MCC ($p<0.01$)

Figure 3. Clinical grading of dryness (A, D), roughness (B, E), and flaking (C, F)



[a]$p<0.001$ vs baseline; [b]$p\leq0.01$ vs MCB

[a]$p\leq0.001$ vs baseline; [b]$p\leq0.01$ vs MCC

Symptoms were graded on a 0–9 scale (0 = none, 9 = severe) at baseline, Day 10, and 5 days after completion of treatment (regression Day 5). R, regression

CONCLUSIONS

- All three moisturizing creams significantly improved hydration of dry skin after 10 days of daily use; this was maintained for 5 days after treatment was discontinued
- In Study 1, MCA demonstrated superiority to MCB in improving skin hydration as well as reducing skin flakiness due to dry skin
- In Study 2, MCA significantly improved skin hydration compared with MCC at Day 10. Additionally, MCA improved TEWL significantly after 10 days compared with baseline, while MCC did not
- These results suggest that MCA outperformed MCB and MCC in alleviating dry skin on the lower legs
- These studies demonstrated that all three products would be suitable for the treatment of xerosis; however, MCA demonstrated superior efficacy as a therapeutic moisturizer

REFERENCE

1. Draelos ZD. *Cutis*. 2013;91:308–314.

Sponsorship: Research sponsored by Beiersdorf Inc., Wilton, CT