

LETTER**WILEY**

Eczema moisturizers: Allergenic potential, marketing claims, and costs

Dear Editor,

Moisturizer use can significantly improve disease outcome in atopic dermatitis (AD), commonly known as eczema.¹ This study aims to evaluate the price, allergenic potential, consumer ratings, and marketing claims of the best selling eczema moisturizers to provide guidance to dermatologists to better counsel AD patients on strategic moisturizer selection.

1 | METHODS

In June-July 2019, the top 30 best-selling moisturizers marketed for "eczema" were identified by averaging their ranks across three major retailers (Walmart, Target, and Amazon). Ingredients, average user rating, average price (USD/oz) and marketing claims were recorded. To establish allergenic potential, ingredients were compared with

allergens in the American Contact Dermatitis Society's Contact Allergen Management Program database (ACDS-CAMP) using Matlab.

A Levene's test was used to check for equality of variance followed by a *T*-test to evaluate the difference in mean price and review between products with a specific marketing claims vs those without. Mann-Whitney *U* was used to evaluate the difference in allergen count between products with specific marketing claims and those without. *P* < .05 was considered significant.

2 | RESULTS

2.1 | Allergenic potential

The best-selling 30 products are found in Table 1. About 98.3% (28/30) of the products contained at least one allergen, with an

TABLE 1 Best-selling eczema moisturizers, mean price/oz, consumer rating, allergen count, and marketing claims

Rank	30 best-selling eczema moisturizers	Mean price/oz	Mean consumer rating	Allergen count	Marketing claims
1	Cetaphil PRO Dry Skin Eczema Soothing Moisturizer	\$1.48	4.68	3	NEA, ER, Alt, CP, FF
2	CeraVe Moisturizing Cream	\$1.03	4.55	3	NEA, SS, DR, FF
3	Aveeno Baby Eczema Therapy Nighttime Balm	\$1.55	4.40	3	NEA, ER, SS, Alt, FF, FB
4	Aveeno Eczema Therapy Daily Moisturizing Cream	\$1.27	4.57	3	NEA, ER, Alt, FF
5	Cortizone 10 Intensive Healing Lotion for Eczema	\$2.24	4.61	6	NEA, ER, Alt, Aln,
6	Gold Bond Eczema Relief	\$1.50	4.40	7	NEA, ER, Alt, FF
7	Eucerin Eczema Relief Body Cream	\$0.86	4.53	4	ER, Alt, CP, DR, FF, FB
8	Aveeno Eczema Therapy Itch Relief Balm	\$1.66	4.67	3	NEA, ER, Alt, FF
9	Puriya Mother of All Cream	\$1.66	4.20	2	ER, Alt, O
10	CeraVe Eczema Soothing Creamy Oil	\$1.88	4.07	2	NEA, ER, SS, Alt, FF
11	Vaseline Eczema Calming Therapy Cream	\$0.86	4.65	3	ER, SS, FF
12	Neosporin Eczema Essentials Daily Moisturizing Cream	\$2.15	4.45	4	ER, CP, FF
13	Aveeno Baby Eczema Therapy Moisturizing Cream	\$1.80	4.57	3	NEA, ER, Alt, CP, FF, FB
14	Eucerin Baby Eczema Relief Body Creme	\$1.50	4.70	4	ER, SS, Alt, CP, FF, FB
15	Up&Up 1% Hydrocortisone Cream With Soothing Aloe	\$2.35	4.80	6	Alt
16	Eucerin Eczema Relief Flare-up Treatment	\$3.48	4.14	6	ER, Alt, FF
17	Up&Up 1% Hydrocortisone Cream Plus 10 Moisturizers	\$2.79	4.50	5	Alt
18	Puriya Mother of All Creams Mildly Earthy	\$6.22	4.20	2	ER, Alt, O
19	Equate Eczema Soothing Moisturizing Cream	\$1.27	4.20	4	ER, Alt, FF

(Continues)

TABLE 1 (Continued)

Rank	30 best-selling eczema moisturizers	Mean price/oz	Mean consumer rating	Allergen count	Marketing claims
20	Dove DermaSeries Eczema Soothing Body Lotion	\$1.35	4.70	5	ER, Alt, CP, FF
21	Exederm Flare Control Cream	\$6.40	4.57	2	NEA, ER, SS, Alt, Aln, FF
22	Babyganics Eczema Care Skin Protectant Cream	\$1.37	4.31	3	ER, SS, Alt, O, FB
23	Wild Naturals Eczema & Psoriasis Cream	\$4.99	4.30	6	ER,
24	CeraVe Hydrocortisone Anti-Itch Cream	\$8.46	4.50	3	ER, Alt, Aln, FF
25	Vanicream Moisturizing Ointment	\$1.29	4.60	0	NEA, SS, DR, FF
26	THENA Natural Wellness Healing Cream	\$5.55	4.30	6	ER, Alt, Aln, O
27	SheaMoisture African Black Soap Eczema & Psoriasis Therapy Body Lotion	\$1.24	4.50	3	ER, O
28	Mustela Stelatopia Emollient Balm	\$3.85	4.29	0	NEA, ER, SS, Alt, CP, FF, FB
29	Era Organics Healing Ointment for Babies	\$4.97	4.20	3	ER, SS, Alt, Aln, O
30	Eucerin Baby Eczema Relief	\$1.50	4.60	4	ER, SS, Alt, DR, FF, FB

Abbreviations: Alt, anti-itch; Aln, anti-inflammatory; CP, clinically proven; DR, dermatology recommended; ER, eczema relief; FF, fragrance free; FB, for baby; SS, sensitive skin/hypoallergenic; NEA, NEA seal; O, organic.

TABLE 2 Common allergic ingredients in eczema moisturizers

Top 10 most prevalent allergens in top selling eczema moisturizers		
Allergen	Main function	Prevalence out of top 30 products
Cetyl alcohol	Stabilizes emulsions	21
Phenoxyethanol	Preservative	15
Aloe	Emollient	10
Benzyl alcohol	Fragrance, preservative, and solvent	9
Panthenol	Lubricant and improves texture of hair	8
EDTA	Binds metal ions to prevent deterioration	7
Mineral oil	Emollient, skin protectant, and solvent	7
Tocopherol	Antioxidant and skin conditioner	6
Chamomile	Fragrance and skin conditioner	3
Stearyl alcohol	Stabilizes emulsions and lubrication	3

Abbreviation: EDTA, ethylenediamine tetraacetic acid.

average allergen count of 3.60. The three most prevalent allergens were cetyl alcohol, phenoxyethanol, and aloe (Table 2). Products with anti-inflammatory claims have the highest allergen count (4.00) while sensitive skin/hypoallergenic have the lowest (2.45). Only the hypoallergenic/sensitive skin (mean rank 10.18 vs 18.58, $P = .011$) marketing claim had significantly lower allergen count than those without this claim (2.45 vs 4.26) (Figure 1).

2.2 | Price

The mean price/oz was \$2.60. Compared with those without the specific claim, products with “anti-inflammatory” claims had the highest mean price/oz (\$5.52 vs \$2.02, $P = .00005$), followed by organic (\$3.44 vs \$2.39, $P = .255$), and anti-itch (\$2.77 vs \$1.93, $P = .358$). “Dermatologist recommended/approved” (\$1.17 vs \$2.82, $P = .001$) had the lowest (Table 3). Price does not correlate with allergen content ($r = -.055$, $P = .778$), but lower price significantly correlates with higher consumer rating ($r = .397$, $P = .0329$).

2.3 | Consumer ratings

The mean consumer rating was 4.46/5. Compared with those without the specific claim, “dermatologist recommended/approved” (4.57 vs 4.44, $P = .007$) had the highest mean consumer rating, followed by clinically proven (4.56 vs 4.43, $P = .123$), and NEA seal (4.50 vs 4.43, $P = .371$). “Organic” (4.29 vs 4.50, $P = .013$) had the lowest rating (Table 3).

3 | DISCUSSION

Marketing claims appears to influence pricing and consumer rating of common eczema moisturizers, which corroborates a prior study on facial moisturizers.² More eczema moisturizers contain at least one allergen than non-eczema specific moisturizers analyzed in a prior study (93.3% vs 88%).³ Eczema moisturizers with hypoallergenic/sensitive skin claims had significantly less allergens than those without the claim. More expensive eczema moisturizers are not necessarily less allergenic. A previous study found that less costly moisturizers

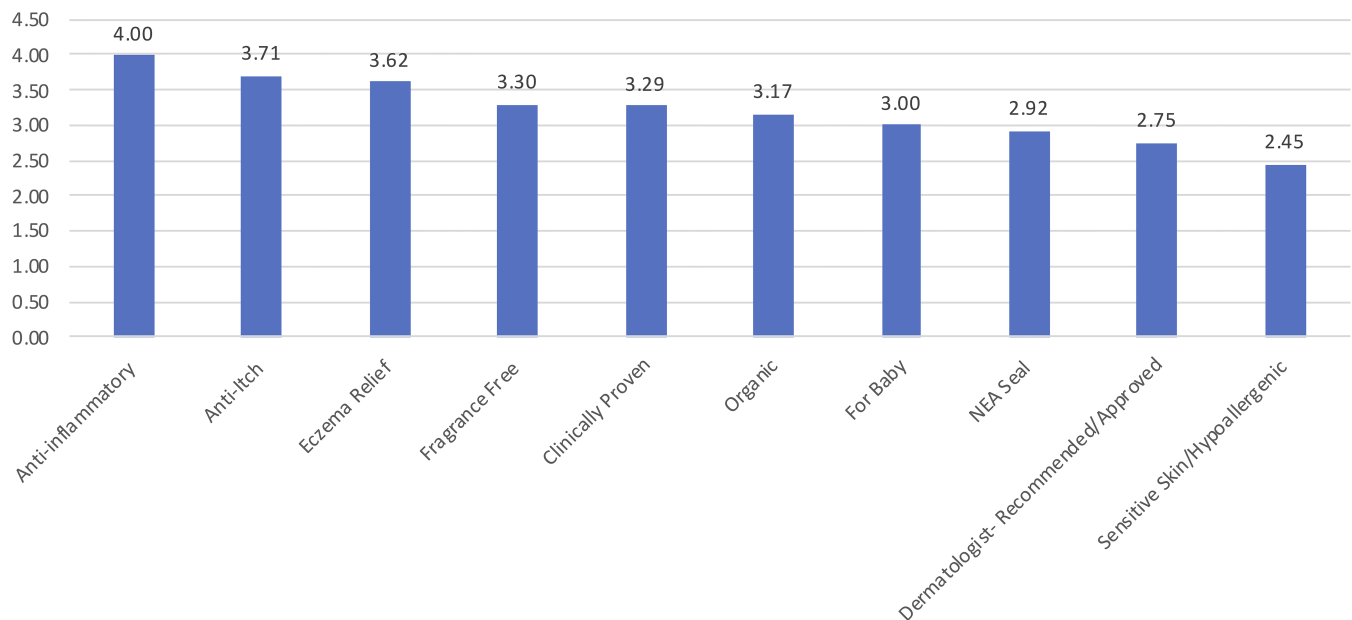


FIGURE 1 Mean allergens count by marketing claim

TABLE 3 Comparison of mean price and mean consumer rating with and without each marketing claim

Marketing claim	Mean price with marketing claim	Mean price without marketing claim	P-value	Mean consumer rating with marketing claim	Mean consumer rating without marketing claim	P-value
Anti-inflammatory	\$5.52	\$2.02	.00005	4.44	4.46	.782
Organic	\$3.44	\$2.39	.255	4.29	4.50	.013
Antiitch	\$2.77	\$1.93	.358	4.45	4.51	.366
Eczema relief	\$2.72	\$1.86	.431	4.44	4.61	.092
Sensitive skin/ hypoallergenic	\$2.38	\$2.73	.648	4.45	4.46	.843
Fragrance free	\$2.26	\$3.30	.178	4.49	4.39	.195
NEA seal	\$2.16	\$2.90	.324	4.50	4.43	.371
Clinically proven	\$1.86	\$2.83	.105	4.56	4.43	.123
For baby	\$1.77	\$2.86	.073	4.49	4.45	.680
Dermatologist recommended/ approved	\$1.17	\$2.82	.001	4.57	4.44	.007

Notes: Average price/oz was determined by recording the average price of the product across all retailers and dividing by the average ounces. Bold denotes statistical significance $P < .05$.

(eg, petrolatum) can have less allergens than more expensive options.⁴ We found that "dermatologist recommended" claims tend to be cheaper and have higher consumer rating, therefore pricing appears to play a role in consumer satisfaction. The reason for cheaper pricing and higher ratings of "dermatologist recommended" moisturizers is likely multifaceted. It is noteworthy that there is no standard consumer rating algorithm for topical products, as rating can be driven by personal preferences on several variables such as cost, scent, vehicle, packaging, and how the product interacts with the consumers' unique skin.

Collective efforts are needed from governmental regulatory agencies, industry manufacturers, and practitioners to standardize product claims and safety testing. While the presence of allergenic ingredients does not necessarily confer a clinical reaction, dermatologists should balance allergenic risk with affordability and consumer preferences when recommending moisturizers in eczema-prone individuals.

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CONFLICT OF INTEREST

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AUTHOR CONTRIBUTION

All authors meet the authorship criteria.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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