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# Comparison of potential contact allergens in best-selling adult and baby cleansers

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To the Editor:

Allergic contact dermatitis impacts approximately 4.4 million children in the United States. Cases of allergic contact dermatitis in children are often underreported, with estimated rates similar to those in adults [1]. In the United States, up to 65% of children referred for patch testing exhibit at least one positive reaction [2]. Furthermore, atopic dermatitis affects over 20% of children, and children with atopic dermatitis are significantly more likely to have positive patch tests [3].

Infant skin has a thinner epidermal layer and less mature barrier function than adult skin, rendering infants more susceptible to irritation by topical products. As such, products targeted for babies are promoted as milder to those intended for adults. However, a study found that top-reviewed baby moisturizers often claimed to be hypoallergenic despite containing at least one allergen, with most containing several [4]. Similarly, the accuracy of allergen safety claims for cleansers remains uncertain, with insufficient research on allergen prevalence. Our goal was to investigate the potential allergen content and marketing claims for popular adult and baby cleansers.

In April 2023, the online retailer Amazon was queried for the top 50 best-sellers in the adult and baby "body wash" departments. Data was collected on the cleansers to include price, ingredients, and marketing claims. The ingredient list was evaluated

for potential allergens using the 2020 American Contact Dermatitis Society core allergen series, a selection of 90 common haptens aimed at expanding the range of allergens tested in patch testing [5]. To compare baby and adult cleansers, the t-test was used to analyze average price and number of allergens while the z-test was used to compare percentages of allergens and marketing claims. A P value of <0.05 was considered to be significant.

The average allergen count in baby cleansers was 2.94, slightly less than the 3.48 average in adult cleansers, but this difference was not statistically significant (P=0.080). Meanwhile, the mean price per fluid ounce was \$0.776 for baby cleansers, more expensive than the \$0.599 per fluid ounce for adult cleansers, but this was also not statistically significant (P=0.099).

Adult and baby cleansers were likely to contain similar amounts of the fifteen out of twenty allergens assessed in their products (**Table 1**). Adult cleansers were more likely to contain benzoyl alcohol (P=0.001), benzyl salicylate (P=0.022), tea tree oil (P=0.022), and peppermint (P=0.041) whereas baby cleansers were more likely to contain decyl glucoside (P=0.001). Notably, baby cleansers were more likely to market their products as being phthalate-free (P<0.001), sulfate-free (P=0.001), dye-free (P<0.001), synthetic fragrance-free (P=0.006), and hypoallergenic (P<0.001).

**Table 1.** Allergens and marketing claims in the top 50 selling adult and baby cleansers.

	Adult cleansers	Baby cleansers	P value
Mean price (\$) per fluid ounce	\$0.60	\$0.78	0.099
Mean number of allergens	3.48	2.94	0.080
<b>Allergens</b>			
Cocamidopropyl betaine	74%	72%	0.822
Any fragrances	74%	64%	0.280
Sodium benzoate	56%	54%	0.841
Phenoxyethanol	26%	28%	0.822
Benzyl alcohol	20%	0%	<b>0.001</b>
Ethylhexylglycerin	16%	18%	0.790
Tocopherol	14%	14%	1.000
Benzyl salicylate	10%	0%	<b>0.022</b>
Tea Tree Oil	10%	0%	<b>0.022</b>
Propylene glycol	10%	2%	0.092
Peppermint	8%	0%	<b>0.041</b>
Methylisothiazolinone	6%	0%	0.079
Methylchlorisothiazolinone	4%	0%	0.153
Benzalkonium	4%	0%	0.153
2-Hydroxy-4-methoxybenzophenone-5-sulfonic acid (benzophenone-4)	4%	0%	0.153
Decyl glucoside	4%	30%	<b>0.001</b>
Paraben	2%	0%	0.315
2-Ethylhexyl-4-methoxycinnamate	2%	0%	0.315
Lavender	2%	8%	0.169
Benzoic acid	0%	4%	0.153
<b>Marketing claims</b>			
Paraben-free	82%	88%	0.401
Phthalate-free	40%	84%	<b>&lt;0.001</b>
Sulfate-free	40%	72%	<b>0.001</b>
Dermatologist recommended	40%	58%	0.072
Dye-free	24%	60%	<b>&lt;0.001</b>
Synthetic fragrance-free	20%	46%	<b>0.006</b>
Hypoallergenic	18%	74%	<b>&lt;0.001</b>

This study examined top-selling cleansers for adults and babies to assess allergen content and marketing claims. Although baby cleansers are often presumed gentler, our findings revealed they had similar allergen averages to adult cleansers. Furthermore, both baby and adult cleansers contained many of the same allergens despite baby cleansers being more likely to be marketed as hypoallergenic.

Individuals with a history of allergic contact dermatitis or atopic dermatitis should be counseled to consider reviewing ingredient lists for all products before purchase, including cleansers.

### Potential conflicts of interest

The authors declare no conflicts of interest.

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