

CASE REPORT

“Slime” contact dermatitis: Case report and review of relevant allergens

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Abstract

Homemade “slime” is currently a popular childhood hobby that can cause allergic and irritant contact dermatitis. We describe a case of hand dermatitis due to homemade “slime” with a positive patch test to methylchloroisothiazolinone (MCI)/methylisothiazolinone (MI) and MI. The most common potential allergens in “slime” collected from a review of “slime” recipes found on the Internet are reviewed.

KEYWORDS

allergic contact dermatitis, allergy, dermatitis contact, eczema, methylchloroisothiazolinone/methylisothiazolinone, methylisothiazolinone, slime

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An 11-year-old white girl with a history of atopic dermatitis since infancy presented with worsening of her hand dermatitis over the prior 2 years (Figure 1A). She had tried numerous topical steroids including clobetasol ointment and halobetasol ointment with minimal improvement and frequent flares. During this time, she also had flares of atopic dermatitis (AD) on her cheeks. Her hobbies included

basketball and playing with “slime.” Her parents suspected that “slime” might have triggered her dermatitis, so she began to play with “slime” inside a sealed bag to prevent direct hand contact, which only slightly improved her dermatitis. She was eventually referred for patch testing because her persistent dermatitis was unresponsive to potent topical steroids. Patch testing was performed with the North American 80 Comprehensive Series (Dormer Laboratories Inc., Toronto, ON) with a positive reaction to methylchloroisothiazolinone/

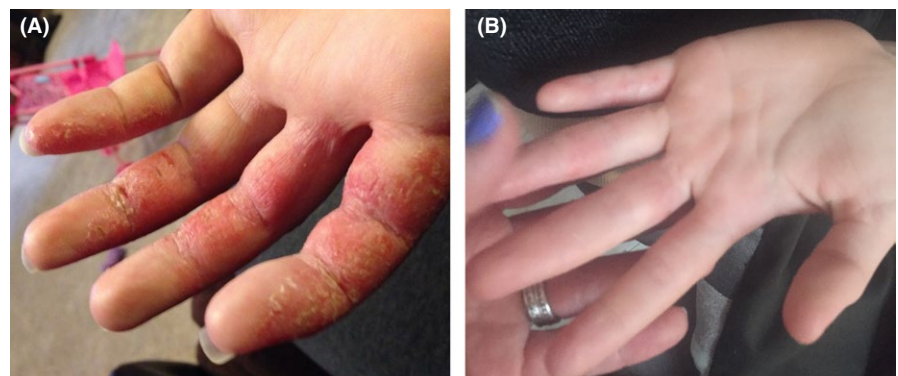


FIGURE 1 A, Patient's hand dermatitis at baseline prior to consultation and slime avoidance. B, Patient's hand dermatitis cleared subsequent to avoidance of slime and products containing MCI/MI and MI. MCI, methylchloroisothiazolinone; MI, methylisothiazolinone

methylisothiazolinone (MCI/MI) and methylisothiazolinone (MI).¹ The “slime” itself was not patch tested. Upon review of her products, several ingredients in her “slime” contained MI, including laundry detergent, liquid dish soap, shampoo, and hand cream. After avoiding skin contact with these products and other products with MCI and MI, she had resolution of her hand dermatitis (Figure 1B) as well as significant improvement in her overall bodywide dermatitis.

TABLE 1 Potential allergens in homemade slime recipes

Allergen	Relevant positive patch test per Pediatric Contact Dermatitis Registry ¹¹	Slime ingredient ^b
Fragrances		
Fragrance mix I ^a	9.4%	Baby oil
Fragrance mix II	3.4%	Liquid dish soap
		Liquid hand soap
		Liquid laundry detergent
		Liquid starch
		Lotion
		Shampoo
		Shaving cream
Preservatives		
Methylisothiazolinone	3.6%	Liquid dish soap
		Shampoo
Methylchloroisothiazolinone/methylisothiazolinone ^a	3.1%	Liquid dish soap
		Shampoo
Propylene glycol	5%	Food coloring
		Liquid laundry detergent
		Lotion
Paraben mix ^a	0.9%	Food coloring
		Lotion
Benzyl alcohol	0.9%	Lotion
Foaming agents		
Cocamidopropyl betaine (CAPB)	4.6%	Liquid hand soap
		Shampoo
Triethanolamine	n/a ^c	Shaving cream
Plant-derived allergens		
Compositae mix	1.8%	Essential oils
		Lotion
Parthenolide ^a	0.9%	Essential oils
		Lotion
Sesquiterpene lactone	1.2%	Essential oils
		Lotion
Formaldehyde releasers		
Diazolidinyl urea ^a	1.3%	Lotion
DMDM hydantoin	0.8%	Liquid hand soap
		Shampoo
Sodium hydroxymethylglycinate	n/a ^c	Liquid starch

(Continues)

TABLE 1 (Continued)

Allergen	Relevant positive patch test per Pediatric Contact Dermatitis Registry ¹¹	Slime ingredient ^b
Stabilizers		
Stearyl alcohol	n/a ^c	Lotion
		Shaving cream
Cetearyl alcohol	n/a ^c	Lotion
Cetyl alcohol	n/a ^c	
Antioxidant		
Tocopheryl acetate	n/a ^c	Lotion
		Shampoo
		Shaving cream
Common irritants: borax, detergents, sodium lauryl sulfate		

^aAllergens present in the T.R.U.E Test™. Italic allergens are not in the T.R.U.E Test.

^bLiquid glue is a common component of slime. However, the ingredients are proprietary, and thus, any potential allergens are unable to be included in this chart. Recent studies have implicated MCI/MI and MI as allergens in liquid glue.^{8,9}

^cData on these allergens are not included in the Pediatric Contact Dermatitis Registry.

“Slime” is a popular childhood toy that is sold in major stores nationwide. In addition, there is a recent trend in children making their own “slime” with recipes found online. These recipes include common household products such as laundry detergent, dishwashing soap, and liquid glue. Children mix the ingredients together, often adding food coloring or glitter to make an attractive product. They then play with the “slime” with their hands, enjoying its stretchy consistency.

We have recently seen a significant number of children with contact dermatitis due to homemade “slime” with presentations similar to the current case. While the majority of cases represent irritant contact dermatitis,² some are allergic³ and can be diagnosed with epicutaneous patch testing. We speculate that children who play with “slime” may be at particular risk of contact dermatitis because some of the components are irritants, which may cause an impaired skin barrier, increasing the risk of sensitization. Children with AD, which is estimated to affect up to 20% of all children, are at particularly high risk due to higher sensitivity to irritants and weaker allergens.⁴ Given children often make “slime” when they are away from their parents (ie, camp, daycare, a friend’s home), it is challenging to ascertain the specific ingredients used. Thus, we sought to compose a list of potential allergens using online “slime” recipes (Table 1).

We used the Google search engine to identify the top slime recipes. We compiled a list of the ingredients in 48 recipes from the first 30 websites returned by the search term “slime recipes.” For each “slime” recipe, we reviewed the ingredient lists for the most popular brands and identified potential allergens and irritants. We also noted allergens present in the T.R.U.E Test™ (Smart Practice Dermatology|Allergy, Phoenix, AZ), as this is a commonly available patch test panel in dermatology offices.⁵ Of note, around 37% of

patients with a positive patch test to MI do not react to MCI/MI, given the low concentration of MI in MCI/MI.⁶ Because of this, patients with MI allergy may not be identified through the T.R.U.E Test, which only tests for MCI/MI. Both MI and MCI/MI are increasingly common allergens and have been implicated in “slime” dermatitis in several recent case studies that identified these allergens in liquid glue.⁷⁻⁹ While the T.R.U.E Test does not capture most of the potential allergens in popular “slime” recipes, the recently published Pediatric Baseline Patch Test Series by Yu et al does and is recommended for use in patients suspected of having dermatitis secondary to “slime.”¹⁰

IRB APPROVAL

This case study was exempt from IRB approval.

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