

Food Avoidance Diets for Systemic, Lip, and Oral Contact Allergy: An American Contact Alternatives Group Article

Andrew Scheman, MD,* Christina Cha, BS,† Sharon E. Jacob, MD,† and Susan Nedorost, MD‡

Background: Patients with systemic, lip, and oral contact allergy will often improve with an elimination diet of related ingredients. Elimination diets for avoidance of many common preservatives, antioxidants, and other food additives have not been published.

Objective: This study aims to create rational elimination diets (including lists of acceptable alternative foods) for several common food ingredients (propylene glycol, sorbic acid/sorbates, aspartame, benzoic acid/benzoates, propionic acid and propionates, gallates, and benzoyl peroxide).

Methods: Data from www.foodfacts.com, a Web site listing ingredient information for more than 75,000 foods, were extracted and sorted into products types, and an elimination diet was created for each of these food-related substances. Easily obtainable alternatives were identified and listed.

Conclusions: Use of food elimination diets may yield improvement in some patients who have not improved with external avoidance of allergens.

SOME INDIVIDUALS with contact allergy who have not improved sufficiently with external avoidance of a causative allergen will respond further with an elimination diet of related ingredients. Systemic contact allergy to substances found in foods is often not recognized by health care providers. Furthermore, the mechanism is not well understood.

The Internet provides a wealth of product information that was not previously easily obtainable. In this article, data on several food additives were extracted from a Web site¹ (<http://www.foodfacts.com>) that provides more than 75,000 food ingredients to assist consumers in locating ingredients in specific food products. We have taken this information and converted it to practical tables to assist providers in identifying potential food sources eliciting systemic contact dermatitis (SCD), educating patients and establishing rational elimination diets for common food-related substances.

In addition to their use in patients with systemic contact dermatitis, food elimination diets are also useful for patients with lip

and oral contact allergy. For this reason, we have also constructed elimination diets for propionic acid and propionates, gallates, and benzoyl peroxide, all known to cause lip and oral contact allergy.

METHODS

The data in this study were extracted from the Web site (www.foodfacts.com), which provides ingredient information for 75,000 common foods. Lists were compiled of all products on this Web site containing propylene glycol, sorbic acid and other sorbates, benzoic acid and other benzoates, propionic acid and propionates, gallates, benzoyl peroxide, and aspartame. The foods on these lists were then sorted into product types, and an elimination diet was created for each of these food-related substances. The resulting diet lists indicate the types of food products each substance is found in and suggests measures that can be taken to avoid these foods. When there are easily obtainable alternatives, these are also recommended.

RESULTS

Food Additives Associated With SCD

Propylene glycol (PG) is an emulsifier, glazing agent, and humectant,^{2,3} which was found in a number of major food categories as seen in Table 1. Propylene glycol was found in 2001 food products of more than 75,000 on this Web site ($\leq 2.7\%$). Many of the foods containing PG are easily avoidable. Table 1 also shows alternatives for several types of products containing PG.

From the *Northwestern University Medical Center, Chicago, IL; †University of California San Diego, San Diego, CA; and ‡Case Western Reserve, Cleveland, OH.

Address reprint requests to Andrew Scheman, MD, Northwestern University Medical Center, Chicago, 1535 Lake Cook Rd, Suite 401, Northbrook, IL 60062. E-mail: andrewscheman@yahoo.com.

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TABLE 1. Propylene Glycol Avoidance Diet

Food Categories	Avoid	Action
Drink mixes	Alcoholic drink mixes, powdered drink mixes	Make alcoholic drinks from scratch; avoid powdered drink mixes.
Creamers	Most creamers	Use real cream.
Beverages	Liquid water enhancer, coffee creamer, prepackaged coffees and cappuccinos, alcoholic drink mixes, beverage mixers (ie, cream of coconut)	Use Sparkling Lemon or Orange Beverage, San Pellegrino Sparkling Lemon or Orange Beverage, Marinelli's Apple Juice, Mott's Apple Juice, RW Knudsen juices, Indian Summer Apple Cider, Welch's Grape Juice, Ocean Spray Cranberry 100% Juice OK; Read labels for other items in group. Nature's Pride Oven Classics Bread, Natural Ovens Bagels, OneRepublic Artisan-Style Pita OK. Read labels for other items in group. Nabisco's belVita Breakfast Biscuits, Fiber One Chewy bars, Kellogg's Pop Tarts, Kashi TLC Soft Baked Cereal Bars OK. Read labels for other items in group. Jell-O Pudding Cups, Haagen-Daaz Ice Creams, Dove Silky Smooth Chocolates, Dove Ice Cream Bars, Comstock MoreFruit Pie Filling or Toppings, San Pellegrino Sparkling Lemon or Orange Beverage, Hostess Cherry and Apple Pie, Naked Juice 100% Juice Smoothie, Betty Crocker brownie mixes, Indiana Kettlecorn Popcorn All Natural, Edy's Fruit Bars OK. Read labels for other items in group. No specific alternatives identified Blue Star Crab Meat OK. Read labels for other items in group. Dried beans, La Preferida brand beans OK. Read labels for other items in group. Oscar Meyer Bacon, Bob Evans Sausage, Oscar Meyer DeliFresh Turkey, Ham, or Chicken, Buddig Packaged Meats, Jimmy Dean's All Natural Pork Sausage, Vienna Beef Franks or Polish Sausage OK. Read labels for other items in group. Daisy Sour Cream or Cottage Cheese, Philadelphia Original Cream Cheese, Yoplait Original Yogurt, Dean's whipping cream, Land O Lakes Butter, Kraft Cheese OK. Read labels for other items in group. Amy's brand frozen meals, Lean Cuisine frozen meals, Stouffer's frozen meals OK. Read labels for other items in group. Some Progresso brand canned soups, Swanson Chicken or Beef Broth OK. Make from scratch. Buy canned soup. Read labels for items.
Bread and flour products	Bagels, breadsticks, buns, rolls, flatbreads, pizza crust, biscuit and mix, stuffing, muffins and muffin mix, breads, dessert shells, cereal bars, cinnamon rolls	
Breakfast foods (prepackaged)	Breakfast bars, yogurt bars, pop tart, breakfast pastries, toaster strudel prepackaged breakfast sandwiches	
Dessert/snack foods	Cakes, cake mixes, dessert toppings, wafers, chocolate, candy, cheesecake, cookies, pudding, mousse, shortcake, ice cream, ice cream cakes, pies, sorbets, cream pies, brownie and brownie mix, popcorn, French fried onion, potato sticks, dessert toppings, shakes, root beer, smoothies	
Fast food/eating out	Almost all fast foods	
Seafood	Salmon and crabcake mixes	
Beans/frozen vegetables	Goya brand canned beans, Bush's Baked Beans, few frozen vegetables	
Meat products	Bacon, meat glazes, premarinated meats (ie, turkey breast, ham)	
Dairy products	Cream cheese, yogurt, oil spreads, sour cream, dips, cheese, whipped cream	
Prepared meals	Frozen microwave meals, prepackaged meals, frozen pizza, prepackaged salads, prepackaged sandwiches	
Soups	Bouillon, dried soup mixes	

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TABLE 1.
(Continued)

Food Categories	Avoid	Action
Spices, seasonings, and cooking products	Food coloring and artificial flavor extracts (ie, butter, vanilla)	Land O Lakes butter OK.
Over-the-counter (OTC) medicines, vitamins, and dietary supplements	Whey powder, medications with coated tablets or liquid form, chewables, lozenges, liquid antacids	Use real butter, use natural flavors, and avoid food color
Condiments/dressings	Horseradish sauce, ketchup, mustard, salad dressings and toppings, spreads, dips, vinaigrette dressings, sauces, gravies	Noncoated pills usually OK.
		Read labels for other items in group.
		Hidden Valley, Marie's, Brianna's Home Style, Newman's Own salad dressings, Heinz Tomato Ketchup, Heinz Chili Sauce, French's and Mustard Girl's mustards, Claussen Pickles Kosher Dill pickles, Boar's Head Horseradish Sauce, Open Pit BBQ Sauce, Smucker's Jelly or Preserves, Tribe Hummus, Tobasco Sauce, Hellman's Mayonnaise Real, Shandy Maple Farms Syrup Thick 'N' Rich Organic Syrup, Nature's Promise Organics Honey Golden Honey, Pompeian Red Wine Vinegar OK.
		Make others from scratch.
		Read labels for other items in group.

Sorbic acid and sorbates are preservatives that prevent growth of mold, yeast, and fungi,³ which were found in 8788 food products of more than 75,000 on this Web site ($\leq 11.7\%$). Table 2 indicates the types of foods that typically contain these preservatives and suitable avoidance measures and alternatives.

Aspartame, an artificial sweetener that metabolizes to formic acid (a formaldehyde derivative), was found in 1643 products of more than 75,000 on this Web site ($\leq 2.2\%$).^{4,5} Table 3 demonstrates the type of food products containing aspartame. Because this ingredient is an artificial sweetener, avoidance is much simpler because all products that are naturally sweetened are acceptable alternatives. In addition, artificially sweetened products using other artificial sweeteners are also acceptable alternatives.

Food Additives Associated With Oral Symptoms and Lip Dermatitis

Benzoic acid and benzoates are also preservatives used to inhibit mold, yeast, and some bacteria.³ They were found in 4966 products of more than 75,000 food products on this Web site ($\leq 6.6\%$). Table 4 shows the various types of foods containing benzoic acid and its derivatives along with appropriate avoidance measures and alternatives.

Propionic acid and propionates are preservatives used to inhibit mold and some bacteria in foods,⁶ which were found in 3528 food products of more than 75,000 found on this Web site ($\leq 4.7\%$). Individuals allergic to propionic acid should also avoid propionates, which may break down in solution into propionic acid. Table 5 shows the types of products in which propionic acid and propionates were found, avoidance measures, and alternatives.

Octyl, lauryl (dodecyl), and propyl gallates are antioxidants that are often in food to prevent rancidity. Octyl and lauryl gallates are found in oil-based foods. On the other hand, the more commonly used propyl gallate is water soluble.³ Propyl gallate was found in 255 products of more than 75,000 on the Web site ($\leq 0.34\%$). Octyl and lauryl gallates should be avoided by using butter or pure oils without added antioxidants. Table 6 shows products with gallates and acceptable alternatives.

Benzoyl peroxide is a chemical-oxidizing agent that was found in 21 products of more than 75,000 on this Web site ($\leq 0.03\%$). This ingredient is found mostly in products containing bleached flour.³ Please note that this ingredient is banned from being used as a flour-bleaching agent in Europe. Table 7 demonstrates the type of products which were located containing benzoyl peroxide. Appropriate avoidance measures are indicated on this chart.

DISCUSSION

Hjorth⁷⁻⁹ first correlated certain flavoring agents and spices with allergy to Balsam of Peru [Myroxylon pereare (MP)] in 1965. Later, others confirmed Hjorth's stance on oral triggers that provoke SCD.^{4,9-18} For example, in a study of 45 fragrance-allergic individuals who did not improve with elimination of external fragrance,

TABLE 2. Sorbic Acid/Sorbates Avoidance Diet

Food Category	Avoid	Action
Baby food	Pedialyte solution	Read labels to avoid ingredient
Beverages	Juice, sparkling juice, cider, tea, soda, flavored water, flavored sparkling water, energy drink, liquid water enhancer, ginger ale, alcoholic mixes	Marinelli's Apple Juice, Mott's Apple Juice, RW Knudsen juices, Indian Summer Apple Cider, Welch's Grape Juice, Ocean Spray Cranberry 100% Juice OK. Read labels for other items in group.
Bread/flour products	Prepackaged muffins and muffin mixes, tortillas, bagels, breadcrumbs, stuffings, biscuits, English muffin, bread, doughnut, pizza crusts, pie crusts	Nature's Pride Oven Classics Bread, Ortega Hard Taco Shells, Natural Ovens Bagels OK. Read labels for other items in group.
Breakfast foods	Malt-O-Meal Mini Spooners, toaster pastries, Quaker Oatmeal Cereal Bars, Kellogg's cereal bars, Kellogg's Frosted Mini-Wheats	Cheerios, Special K, Kashi GoLean, Fiber One Cereals, Bisquick Baking and Pancake Mix OK. Read labels for other items in group.
Condiments/dressings	Lemon juice, lime juice, wasabi, hot mustard, horseradish sauce, pizza sauce, tartar sauce, red wine vinegar, fruit glazes, cocktail sauces, salad dressings and vinaigrettes, dips, ketchup, salsa, barbecue sauces, resish, soy sauce, syrup, preserves, jam, spreads, marmalades, hummus, pickles, mayonnaise	Heinz Tomato Ketchup, French's Mustard, Boar's Head Pickles Kosher Dill Spears, Smucker's Jelly or Preserves, Tabasco Sauce, Grey Poupon Dijon Mustard, Lea & Perrins Worcestershire, Nature's Promise Organics Honey Golden Honey, Heinz Chili Sauce, Open Pit BBQ Sauce, Shandy Maple Farms Organic Syrup, Newman's Own Salad Dressing, Hellman's Mayonnaise Real, Tribe Hummus, Boar's Head Horseradish Sauce, Pompeian Red Wine Vinegar, Kikkoman Soy Sauce OK. Use fresh limes/lemons. Make sauces from scratch. Read labels for other items in group.
Sweet dessert/snack foods	Marzipan, fudge bars, popsicles, ice cream, dessert toppings, frozen yogurt, sorbet, ice cream, granola bars, cookies, cakes, prepackaged cakes and pastries, mints, cake mix, frosting, Italian ice, candy, fruit snacks	Jell-O Gelatin Cups, Haagen Daz Ice Cream, Edy's Fruit Bars, Pepperidge Farm Cookies, Nabisco Teddy Grahams, Jell-O Pudding Cups OK. Read labels for other items in group.
Egg products	Prepackaged egg whites	Egg Beaters Egg Whites Original OK. Read labels for other items in group.
Fast food	Almost all fast foods	No specific alternatives identified
Seafood	Prepackaged seafood (ie, cocktail shrimp)	Blue Star Crabmeat and Van de Kamp frozen seafood OK. Read labels for other items in group.
Fruits/nuts/vegetables	Prepackaged fruits	Ocean Spray Craisins, SunMaid Raisins OK. Read labels for other items in group.
Meat products	Dried beef, beef frankfurters, hot dogs	Oscar Meyer Bacon, Bob Evans Sausage, Buddig Packaged Meats, Oscar Meyer DeliFresh Turkey, Ham, or Chicken, Jimmy Dean's All Natural Pork Sausage, Vienna Beef Franks or Polish Sausage OK. Read labels for other items in group.
Meat products continued		
Dairy products	Whipped cream, prepackaged dessert, sour cream	Daisy Sour Cream or Cottage Cheese, Yoplait Original Yogurt, Dannon All Natural Yogurt, Philadelphia Original Cream Cheese, Dean's whipping cream OK. Read labels for other items in group.

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TABLE 2. (Continued)

Food Category	Avoid	Action
OTC medicines, vitamins, and dietary supplements	Liqui-gel, soft gel, or liquid medications, chewable tablets, gummy lozenges	Pills are usually OK; Read labels to avoid ingredient
Pasta, rice, and other grains (uncommon)	All Dreamfields brand pastas, Bellino pastas	All non-whole wheat Buitoni pastas are OK. Read labels for other items in group.
Prepared meals	Instant microwavable foods	Read labels to avoid ingredient
Soups	Canned or instant soups	Some Progresso brand canned soups, Swanson Chicken or Beef Broth OK. Make from scratch.
Toppings/cooking products	Yeast, imitation cheese toppings	Read labels for other items in group. Avoid imitation cheese toppings, Red Star Active Dry Yeast OK. Read labels for other items in group.

TABLE 3. Aspartame Avoidance Diet

Food Category	Avoid	Action
Beverages	Sugar-free, diet drinks	Nondiet drinks, Read labels on diet drinks
Syrups, jams, preserves	Sugar-free syrup, preserves, jam, spreads, marmalades	Regular syrups, jams, preserves; read labels on sugar-free items;
Dessert/snack foods	Sugar-free/diet sweets, desserts, snacks	Nondiet sweets; read labels on diet items
Seafood	SeaPak Oven Crunchy Coconut Shrimp	Read labels to avoid ingredient
Fruits	Prepackaged fruits and ginger	Read labels to avoid ingredient
Protein/health products	Protein powder, protein bars, Slim-Fast shakes	Read labels to avoid ingredient
Prepared meals	Slim-Fast Shakes, Lunchables, Kraft South Beach Wraps, protein powders	Read labels to avoid ingredient
Sweeteners, spices, and cooking products	Equal brand, Nutra brand, Amigo 0 brand, light cooking wines	Use other sugar substitutes: that is, saccharin, stevia, sucralose, maltitol, sorbitol, erythritol, xylitol
OTC medicines, vitamins, and dietary supplements	Metamucil fiber laxative/fiber supplements, cough drops, sugar-free antacids, flavored supplements, chewable vitamins	Read labels to avoid ingredient.

47% improved substantially or cleared on a balsam-restricted diet.¹⁹ Many other studies provided evidence of flavorants in foods triggering fragrance-allergic reactions.^{20–24} Dermatitis flares may occur, as witnessed by Fowler,²⁵ yet flexural dermatitis,²⁶ baboon syndrome,²⁷ eruptive vesicular hand eczema,²⁸ vasculitis-like lesions,²⁹ and maculopapular rash²⁶ have also been observed manifestations of SCD. More recently, laboratory data have shown that the chemical constituents in these foods (eg, tomatoes) are in fact the same chemicals that occur naturally in MP.³⁰ Notably, benzoic acid and benzoates are naturally occurring constituent of MP.³⁰

Besides MP, another well-recognized source of ingestion-associated SCD is certain metals. Manifestations of systemic contact dermatitis from metals have been described in the literature by ways of oral ingestion, by transcutaneous and intravenous exposure, or by inhalation.^{26,31,32} Although it is not possible to entirely eliminate ingestion of trace amounts of metal, diets that reduce the amount of ingested metals such as nickel, cobalt, and chromium have shown some clinical efficacy, particularly for chronic vesicular hand dermatitis.^{25–29,31–52} Some providers recommend a points-based approach to these diets, whereby foods with higher concentrations of the ingredient are assigned a higher point value and prioritized for avoidance. This can be quite helpful because the burden of avoiding large numbers of foods is high.⁵² Unfortunately, elimination diets for avoidance of many common preservatives, antioxidants, and other food additives have not been published, and further evidence and studies are needed.

TABLE 4. Benzoates/Benzoic Acid Avoidance Diet

Food Category	Avoid	Action
Baby food	Pedialyte solution	Read labels to avoid ingredient.
Beverages	Sodas, energy drinks, coffee, powder and liquid drink mixes, fruit drinks, juices, alcoholic mixes, lemonades, flavored teas, flavored water, sparkling water	Izze Sparkling Juice, La Croix Sparkling Water, San Pellegrino Sparkling Lemon or Orange Beverage, Marinelli's Apple Juice, Mott's Apple Juice, RW Knudsen juices, Indian Summer Apple Cider, Welch's Grape Juice, Gatorade, Ocean Spray Cranberry 100% Juice OK. Read labels for other items in group.
Bread and flour products	Pitas, tortillas, taco shells, bread	Nature's Pride Oven Classics Bread, Azteca Tortillas, Ortega Hard Taco Shells, Nature's Oven Bagels, One Republic Artisan-Style Pitas OK. Read labels for other items in group.
Breakfast foods	Cereal bars, breakfast bars, pancakes, General Mills Fruity Cheerios, waffles, fruit/oatmeal bar, protein bars, prepackaged breakfast sandwiches	Bisquick Baking and Pancake Mix, Kellogg's Nutri-Grain Cereal Bars, Health Valley Cereal Bars, Kashi TLC Soft Baked Cereal Bars OK. Read labels for other items in group.
Condiments/dressings	Prepackaged olives, prepackaged garlic, hummus, preserves, jam, spreads, mustard, horseradish sauce, hot sauce, prepackaged peppers, giardiniera peppers, pickles, salsa, salad dressings, ketchup, barbecue sauce, marmalades, mayonnaise, marinades, syrup, Asian sauces (peanut, wasabi, and soy sauce, etc)	Heinz Tomato Ketchup, French's Mustard, Our Family Pickles Kosher Dill Baby, Open Pit BBQ Sauce, Heinz Chili Sauce, Boar's Head Horseradish Sauce, Smucker's Jelly or Preserves, Newman's Own Salad Dressing, Tobasco Sauce, Tribe Hummus, Hellman's Mayonnaise Real, Shandy Maple Farms Organic Syrup, Nature's Promise Organics Honey Golden Honey, LaChoy Soy Sauce All Purpose, Krinos Olives Kalamata, Pompeian Red Wine Vinegar OK. Make others from scratch. Use fresh garlic and fresh peppers. Read labels for other items in group.
Sweet dessert/snack foods	Cake, cake mix, brownie, brownie mix, cookies, doughnuts, pastries, pies, cobblers, cream puffs, cheesecake, dessert toppings, pie fillings, sorbets, popsicles, jello, candy, fruit snacks	Jell-O Pudding or Gelatin Cups, Nabisco Teddy Grahams, Edhy's Fruit Bars, Pepperidge Farm Cookies OK. Read labels for other items in group.
Egg products	Prepackaged hard boiled eggs	Boil eggs at home; avoid prepackaged boiled eggs.
Fast food	Almost all fast foods	No specific alternatives identified.
Seafood	Canned or prepackaged fish	Blue Star Crabmeat, Gorton's brand frozen fish OK. Read labels for other items in group.
Fruits/vegetables	Canned or prepackaged fruits and vegetables (frozen and nonfrozen)	Ocean Spray Craisins, SunMaid raisins OK. Freeze fresh vegetables and fruits. Read labels for other items in group.
Meat products	Prepackaged meats (ie, ham, shredded beef, etc)	Oscar Meyer Bacon, Bob Evans Sausage, Oscar Meyer Deli Fresh Turkey, Ham, or Chicken, Jimmy Dean's All Natural Pork Sausage, Vienna Beef Franks or Polish Sausage, Buddig Packaged Meats OK. Read labels for other items in group.

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TABLE 4. (Continued)

Food Category	Avoid	Action
Dairy products	Butter, margarine, oil spreads, cottage cheese, cream cheese, cheese, dips, ice cream, ice cream cakes, custard, pudding, powdered shake mixes, milkshakes, yogurt	Daisy Sour Cream or Cottage Cheese, Yoplait Original Yogurt, Dean's whipping cream, Philadelphia Original Cream Cheese, Dannon All Natural Yogurt, Land O Lakes Butter, Kraft Cheese, Edy's Fruit Bars, Haagen-Daaz Ice Cream.
OTC medicines, vitamins, and dietary supplements	Medications with coated tablets or liquid form, protein bar, protein shakes and mixes, vitamins (hard and chewable), aloe vera juices	Read labels for other items in group. Many uncoated pills, EAS 100% Whey Protein OK. Read labels for other items in group.
Prepared meals	Instant microwavable foods	Cook at home. Read labels for items in group.
Soups	Canned, prepackaged, instant soups	Some Progresso brand canned soups, Swanson Chicken or Beef Broth OK. Make from scratch.
Spices, seasonings, and cooking products	Sweet 'N Low Liquid Sweetener, Mrs. Dash marinades, food colorings and dyes, artificial flavorings, packaged seasoning mixes	Read labels for other items in group. Use sugar, natural flavors and individual seasonings; avoid food color

An online database is useful to identify the types of food products containing ingredients that may cause systemic contact allergy. The data extracted from this Web site provide detailed information on the types of food products containing these specific ingredients. Using these data, it is possible to educate patients on which foods may contain specific allergens, and a diet can then be developed that will allow patients to avoid specific food allergens.

Propylene glycol, sorbic acid derivatives, benzoic acid derivatives, and propionic acid are all relatively ubiquitous ingredients.³ All of these allergens are heavily represented in packaged and processed foods.³ Propylene glycol has been recognized as a good solvent and vehicle for many substances,⁵³ thus commonly found in foods. Because of its antimicrobial and hygroscopic qualities,⁵⁴ propylene glycol is also found in certain medications (especially syrups, liqui-gels, lozenges, chewable pills, oral strips, and nasal sprays). Reports of PG-sensitive patients having reactions triggered by oral ingestion of PG have been described.^{10–12,55}

Dietary exposure to sorbic acid has been reported to cause vesicular hand and foot eczema and shown to be curative once avoided in diet.¹³ Aspartame has been described in the literature as a possible cause of systemic contact allergy in individuals allergic to formaldehyde.^{4,5}

Other food additives have been reported to cause contact reactions on the lips and oral mucosa. Sorbic and benzoic acid have been reported to cause nonimmunologic contact urticaria on the lips.^{45–47} Although we were not able to find any previous reported cases of SCD, an avoidance diet was reported to successfully treat 22 patients with urticaria allergic to sodium benzoate.^{53,56} Because benzoates are emerging allergens, it is also possible that SCD occurs but has not yet been identified.

Propionic acid serves as a preservative in very few snack foods and prepackaged meat products but is present in most of bread products. It has been associated with lip dermatitis, as have gallates, antioxidants found in many food oils and margarine.³ Gallates in peanut butter have also been reported to cause dermatitis in food handlers as well.^{48–51} Benzoyl peroxide, a medicinal for acne and a bleaching agent in flour, has also been mentioned in the literature as triggering oral symptoms, such as lip swelling and oral ulcerations.³ Frequent reports of hand dermatitis in bakers who handle this allergen have also been made.⁵⁷

CONCLUSIONS

A Web site with ingredient information for 75,000 common food products was examined. Lists were obtained of foods containing specific allergens. The prevalence of these allergens in foods was determined, and the lists were used to demonstrate the particular types of foods containing each specific allergen. From this information, elimination diets were developed for common food additives including propylene glycol, sorbic acid and sorbates, benzoic acid and benzoates, propionic acid and propionates, gallates, aspartame, and benzoyl peroxide. Some patients with

TABLE 5. Propionic Acid/ Propionate Avoidance Diet

Food Category	Avoid	Action
Bread/flour products	Tortillas, pitas, flatbreads, bagels, muffins, English muffins, buns, rolls, breads, pasta, croissants, breadcrumbs, pizza crust, breadsticks, stuffing, spring roll wrappers, wraps, croutons	Nature's Pride Oven Classics Bread, Azteca Tortillas, Natural Ovens Bagels OK. Read labels for other items in group.
Breakfast foods	Pancakes and pancake mixes, waffles and waffle mixes, French toast, toaster strudel, biscuit and biscuit mixes	Read labels to avoid ingredient
Fast food	Almost all fast foods	No specific alternatives identified
Meat products (uncommon)	Prepackaged shredded beef or chicken, prepackaged frozen meatballs, Perdue prepackaged chicken	Buddig Packaged Meats OK. Read labels for other items in group.
Dairy products	Packaged cheese slices, cream cheese, Weight Watchers cheese products	Athens Feta Cheese, Organic Valley Cream Cheese, Laughing Cow Cheese, Laughing Cow Mini Babybel Cheese, Kraft Singles cheese slices OK. Read labels for other items in group.
Prepared meals	Prepackaged or microwave meals, canned soup, Lean Cuisine, Atkins, Slim Fast, dietary bread	Some Progresso brand canned soups, Swanson Chicken or Beef Broth OK. Read labels for other items in group.
Dessert/snack foods	Cakes, brownies, donuts, pies, pastries, cookies, pies, pastries, tortilla, Athenos brand pita chips, corn chips	Fritos chips, Tostitos Restaurant Style chips OK. Read labels for other items in group
Spices, seasonings, and cooking products (uncommon)	Et Tu Caesar brand Salad Kits, seasoned coating mixes for baking chicken (ie, Kraft Shake 'N Bake Crispy Chicken Nuggets Seasoned Coating Mix)	Read labels for items to avoid.
OTC medicines, vitamins, and dietary supplements (uncommon)	Tylenol brand pain relievers, Tylenol Allergy Multi Symptom Rapid Release Gels, GNC Liquid Melatonin	Read labels for items to avoid.

allergy to one of the preservatives/antioxidants covered in this article may benefit from viewing the types of food products that contain the allergen. These patients will benefit from receiving accurate instructions regarding avoidance and alternatives and

possibly a brief demonstration of how to use the avoidance diets from one of the support personnel in the physician's office. It is our opinion that it is important to make these avoidance diets available so that it will be possible for providers to determine whether these

TABLE 6. Gallates Avoidance Diet

Food Category	Avoid	Action
Bread/flour products	Kraft, Great Value, and ShopRite brand stuffings, tortillas	Pepperidge Farm or Brownberry stuffing OK.
Breakfast foods	Prepackaged breakfast sandwiches	Read labels to avoid ingredient
Condiments/dressings	Dips, prepackaged guacamole	Make from scratch
Dessert/snack foods	Frosting mix, prepackaged pies and cakes	Read labels to avoid ingredient
Fast food	All McDonald's breakfast meals with sausage, Panera Bread's Turkey Artichoke Panini, Kentucky Fried Chicken's rice	No specific alternatives identified
Meat products	Prepackaged sausage patties, sausage links, and brats	Read labels to avoid ingredient.
Pasta, rice, and other grains	Prepackaged rice and pasta	Read labels to avoid ingredient.
Prepared meals	Microwave meals—read ingredients	Read labels to avoid ingredient.
Sauces/gravies	Powdered sauce packets, canned gravy	Make from scratch
Soups	Soup stocks and broths, bouillon cubes, soup mixes	Buy canned soups.
Oils, margarine	Lard, shortening, cooking oils, margarine	Use butter, extra virgin olive oil
OTC medicines, vitamins, and dietary supplements	Oral probiotics, fiber supplements	Read labels to avoid ingredient

TABLE 7. Benzoyl Peroxide Avoidance Diet

Food Category	Avoid	Action
Bread/flour products	Beware of white powder on breads, avoid if containing enriched or bleached flour.	Read labels to avoid ingredient.
Dessert foods	Beware if containing enriched or bleached flour.	Read labels to avoid ingredient.
Prepared meals	Beware if containing enriched or bleached flour.	Read labels to avoid ingredient.
Soups	Beware if containing enriched or bleached flour.	Read labels to avoid ingredient.

will be useful tools for resolving contact allergy when external avoidance alone is not sufficient.

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