CONTACT DERMATITIS

The top ten allergens, as identified by the North American Contact Dermatitis Groups, are listed in the Table. This list shows three metals, three preservatives, two topical antibiotics, and two fragrance components, thus illustrating several common contactants (Table 1). Many other agents can also be troublesome. See also: **Contact Dermatitis** in **Cosmetic Dermatology 101**.

Table 1: Top 10 Allergens

Test Substance	Allergic Reactions (%)	Relevant Reactions (%)
Nickel sulfate	16.7	49.4
Neomycin sulfate	11.6	32.3
Balsam of Peru	11.6	80.7
Fragrance mix	10.4	83.5
Thiomerosal	10.2	7.2
Sodium gold thiosulfate	10.2	37.3
Quaternium-15	9.3	84.3
Formaldehyde	8.4	69.6
Bacitracin	7.9	42.6
Cobalt chloride	7.4	43.8

From North American Contact Dermatitis Group patch-test results, 2001-2002 study period. Dermatitis. 2004;15:176-83.

Nickel

The high rate of nickel allergy has been largely attributed to ear piercing. It may present as earring dermatitis, dermatitis under a necklace or watch, or dermatitis of the mid-abdomen from a snap or belt buckle. (Figure 1) A dimethylglyoxime test can be used to identify whether a particular item contains nickel (turns pink).

Gold and silver are soft metals and need to be streghthened by adding another metal such as nickel. White gold and lower carat (kt) have enough nickel to cause a reaction, if someone is nickel sensitive. A way to wear the earring or necklace is to apply several coats of clear nail polish to protect the skin from direct contact. Platinum and stainless steel will not cause a reaction (Table 2).

Figure 1: Contact dermatitis that developed from a silver-plated watch and watchband.

Table 2: Common Components of Jewelry

Name	Allergic Reaction	Component	Comment
Plastics			
Bakelite	-	Thermoplastic	
Celluloid	-	Thermoplastic	
Lucite	-	Thermoplastic	
Metal			
Aluminum	-		
Copper	-		
Gold Rose White Yellow	 +/- ++ ++	 Copper Nickel Nickel	Gold – filled 10 kt, 14 kt (American standard), and low kt (9 – 12 Kt, UK standard) often cause reactions, but 18 kt (French and Italian) and high kt (15 – 18 kt, UK) rarely cause reactions
Platinum	-		
Silver	++	Nickel	
Steel, stainless	-		

Topical Antibiotics – Neomycin and Bacitracin

Neomycin is the most commonly used topical antibiotic and is the most common sensitizer among topical antibiotics. Bacitracin is another topical antibiotic that is commonly used. Both are found in antibacterial creams and otic and ophthalmologic preparations. They are frequently used in combination with each other. Although they are chemically unrelated, they often show co-reactivity due to sensitization to both. Anaphylaxis and contact urticaria are reported more often with bacitracin than with other topical antibiotics. Mupiricin (Bactroban®) and retapamulin (Altabax®) infrequently cause allergic reaction to the skin. (Figure 2)

Figure 2: Contact dermatitis can also occur from antiseptic agents. This man thought his contact dermatitis to shoes was an infection and compounded the irritation by applying povidone-iodine solution (Betadine®).

Fragrances – Balsam of Peru and Fragrance Mix

Balsam of Peru is a naturally occurring fragrance that will cause reactions in about half of those with fragrance allergy. Allergy is most often seen in those with fragrance allergy or those with allergies to spices, including cloves, cinnamon, and Jamaican pepper. A positive reaction requires one to avoid specific fragrances. Occasionally, colas, tobacco, wines, and vermouth can cause this allergy.

The Fragrance mix contains eight different fragrance components that detect 70-80% of fragrance allergies. Patients identified as allergic to fragrances must read all labels and avoid any product that lists fragrance, is labeled ‘unscented’ (may contain a masking fragrance), or has an obvious scent. They should look for products labeled ‘fragrance-free’. (Figure 3)

Balsam of Peru becomes a particular problem in hospitals and extended care facilities, where this used indiscriminately for treating and/or preventing skin breakdown (bedsores). Many patients develop contact dermatitis in this manner.

Figure 3: This woman sprayed perfume on her neck as part of her daily routine. She never thought that the fragrance could cause contact dermatitis.

Quaternium-15

Quaternium-15 is the most common cosmetic preservative to cause contact dermatitis. It typically plays a role as an allergen in personal care products – shampoos, conditioners, soaps, and moisturizers. Most allergies to quaternium-15 are relevant to a patient’s dermatitis, and 80% of those who react are also allergic to formaldehyde. Avoidance of quaternium-15 requires label reading.

Corticosteroids

Corticosteroids have been shown to cause ACD in 0.2-6% of patients. This should be suspected in patients with chronic dermatitis, failure to clear with topical steroids, and exacerbation of dermatitis after use of topical steroids. Although this is uncommon, it should be considered, when looking for a cause of dermatitis.

In the absence of patch testing, an empiric trial of desoximetasone (Topicort®) or mometasone (Elocon®) will give the best chance of selecting a corticosteroid with an extremely low chance of sensitization. If patch testing is desired, tixocortol-21-pivalate and budesonide (Pulomicort®, Rhinocort Aqua®, and Entocort EC®) detect 91.3% of corticosteroid allergy. (N.B. Budesonide is not used usually as a topical corticosteroi.) Adding hydrocortisone-17-butyrate (Locoid®) will increase the yield.

Sunscreens

Oxybenzone is the most common sunscreen allergen. PABA (p-Aminobenzoic acid) and its derivatives are photosensitizers and sensitizers. If allergic to PABA, thiazides, sulfonylurea (anti-diabetic medication), azo dyes, benzocaine, p-aminosalicylic acid, and p-phenyldiamine all may cause dermatitis from cross-reaction. See also **Sunscreen** in **Cosmetic Dermatology 101**.

The lesson here is that trying to prevent sunburn and the effects of the sun on aging may cause dermatitis. If the skin becomes itchy and/or red after application of a sunscreen, consider an allergic reaction.

Topical Anesthetics

The continued use of anti-pruritic creams and lotions may cause sensitization. Chronic application in the anogenital area can lead to an itchy dermatitis, as well.

Benzocaine is frequently used as an anti-pruritic and is the most common topical sensitizer. Many cross-reactions are seen in benzocaine sensitive individuals (see section on sunscreens). It should be noted that methylparaben, the preservative in many preparations, might also cause the hypersensitivity reactions attributed to the local anesthetics, although infrequently. (Figure 4)

Figure 4: While the antihistamine diphenhydramine (Benadryl®) acts as an anesthetic or analgesic when applied to the skin, it often creates a second contact dermatitis. It is frequently combined with calamine lotion (Caladryl®), which causes more mischief.

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