

cutaneous symptoms with initiation of VDZ.⁴ Vedolizumab has only recently become available for the treatment of CD and UC, and therefore, long-term safety data are lacking; so, it is important to describe side effects of new drugs that have not been already reported.⁵ In our case, HS appeared only after the administration of VDZ, regressed after stopping the drug, and reoccurred when it was restarted. This pattern is consistent with a drug-induced side effect, which to our knowledge is the first reported case of VDZ-induced HS. Vedolizumab is supposed to decrease cutaneous side effects; however, our patient developed one. Some research has shown that $\alpha_4\beta_7$ integrins are expressed at high levels on epidermotropic T cells⁶; therefore, we could hypothesize that the VDZ acting on $\alpha_4\beta_7$ integrins could be a trigger for the development of HS.

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Defining Fragrance Allergy in the Contact Allergen Management Program

To the Editor:

Fragrances are scented compounds used in many products. A total of 4.5% of the general population are allergic to fragrant materials; this frequency increases to 20% to 25% among patch-tested patients.¹ Patch test screening allergens include classical individual fragrances and fragrance mixes, although, increasingly, other fragrances and botanicals are being tested, such as limonene and linalool and their hydroperoxides.

In the setting of a fragrance-positive patch test result, where to draw the line with potential fragrance cross-reactors has been controversial. Although, conceptually, it may be the easiest to eliminate absolutely all fragrances and fragrance-related compounds in the setting of a positive patch test result in order to eliminate any potential cross-reactors, this (1) may be an extreme overreach in the setting of only 1 or 2 fragrance reactions and (2) may cause undue burden on the patient, as this would severely limit the number of products he/she is able to use. Questions have arisen among Contact Allergen Management Program (CAMP)—using physicians as to where this line should be drawn. Should fragrance-related compounds with dual functionality be eliminated by the application (eg, benzophenone-4, which is both a UV filter and has a rose-like scent)? What about botanicals? Accordingly, CAMP-using physicians have requested at times that either more or fewer fragrances be included for elimination within the CAMP to suit the needs of their patients. As a response to these inquiries and requests, the American Contact Dermatitis Society CAMP Cross-Reactor Committee has developed 2 categories to select for allergen elimination for physicians who wish to eliminate fragrance from a patient's personal products: a standard fragrance elimination category and a more restrictive category.

The standard category within CAMP for fragrance elimination is based on what few studies are available that discuss fragrance cross-reactivity: a systematic review compiled by Uter et al² that graded the clinical relevance of sensitizing fragrances through database (eg, PubMed) analysis with the consideration of the number of patients affected and the Scientific Committee on Consumer Safety–European Commission 2012³ review on fragrances. In general, this category eliminates traditional fragrances. The fragrances eliminated by the standard category are outlined in Table 1.

The restrictive fragrance category within CAMP eliminates every possible fragrance, including traditional fragrances and perfumes, botanicals, and fragrance-related/dually functional chemicals. Table 2 outlines additional fragranced ingredients

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TABLE 1. Standard Fragrance Cross-Reactivity Elimination Category (by INCI Name When Possible)**Fragrances/Flavorings:**

- Acetylcedrene
- α -Amyl cinnamal
- Amylcinnamyl alcohol
- Amyl salicylate
- *trans*-Anethole
- Anise alcohol
- Aroma
- Artificial flavor
- Ascorbic acid
- Benzaldehyde
- Benzyl alcohol
- Benzyl benzoate
- Benzyl cinnamate
- Benzyl salicylate
- Butylphenyl methylpropional
- Camphor
- β -Caryophyllene
- Carvone
- Cinnamal
- Cinnamyl alcohol
- Cinnamon flavor
- Citral
- Citrus flavor (lemon, lime, orange)
- Citronellol
- Coumarin
- (Damascenone) rose ketone-4
- α -Damascone
- *cis*- β -Damascone
- δ -Damascone
- Dimethyl benzyl carbonyl acetate (DMBCA)
- Ethyl vanillin
- Eugenol
- Farnesol
- Flavor/flavoring
- Fragrance/fragrance mix
- Geraniol
- Hexadecanolactone
- Hexamethylindanopyran
- α -Hexyl cinnamal
- Hydroxyisohexyl 3-cyclohexene carboxaldehyde (HICC)
- Hydroxycitronellal
- Isoeugenol
- α -Isomethyl ionone
- Lemon flavor
- D,L-Limonene
- Linalool
- Linalyl acetate
- Licorice flavor
- Mandarin juice
- Masking fragrance
- Menthol
- 6-Methylcoumarin
- Methyl 2-octynoate
- Methyl salicylate
- 3-Methyl-5-(2,2,3-trimethyl-3-cyclopentenyl-1-yl)-4-penten-2-ol
- Natural flavor
- Orange extract/flavor
- Parfum
- α -Pinenes
- β -Pinenes
- Pine scent
- Propylidene phthalide
- Salicylaldehyde
- α -Santalol
- β -Santalol
- Sclareol
- Terpineol
- α -Terpineol
- Terpinolene
- Tetramethyl acetyloctahydronaphthalenes
- Trimethylbenzenepropanol (Majantol)
- Vanillin/vanilla flavor

Botanicals/Essential Oils:

- Botanicals
- *Cananga odorata* and ylang-ylang oil
- *Cinnamomum cassia* leaf oil
- *Cinnamomum zeylanicum* bark oil
- *Citrus* species
- *Cymbopogon citratus/schoenanthus* oils
- *Eucalyptus* species leaf oil
- *Eugenia caryophyllus* leaf/flower (clove) oil
- *Evernia furfuracea* extract (tree moss)
- *Evernia prunastri* extract (oak moss)
- Hydrogenated lime seed/orange seed fruit oils
- *Jasminum grandiflorum/officinale*
- *Laurus nobilis*
- *Lavandula hybrida*
- *Lavandula officinalis*
- Lemon peel ferment extract
- *Melaleuca alternifolia* (tea tree) oil
- *Mentha piperita* (peppermint)
- *Myristica fragrans* (nutmeg) extract/powder/oil
- *Myroxylon pereirae* (balsam of Peru)
- *Myroxylon balsamum* (balsam of Tolu)
- *Narcissus* species
- *Pelargonium graveolens* (geranium)
- *Pimpinella anisum* (anise) extract/oil/water
- Rose flower oil (*Rosa* species)
- *Torreya californica* (California nutmeg) extract/oil
- Turpentine (oil)
- *Vanilla planifolia/tahitensis* extract/oil/water/powder/fruit/seed
- *Verbena officinalis*

Standard fragrance cross-reactivity elimination category (by INCI name when possible) based on the systematic review from Uter et al² in 2013 and the Scientific Committee on Consumer Safety–European Commission review in 2012.³ If only “fragrance,” “parfum,” “aroma,” and/or “flavor” is listed as an ingredient, it will be eliminated in this category. INCI, International Nomenclature of Cosmetic Ingredients.

TABLE 2. Restrictive Fragrance Cross-Reactivity Elimination Category (by INCI Name When Possible)**Fragrances/Flavorings:**

- Ambrettolide
- Aloe
- Apple flavor
- Atranol
- Banana flavor
- Benzophone-4
- Berry flavor
- Bisabolol
- C8-10 alkane/cycloalkane/aromatic hydrocarbons
- C9-10 aromatic hydrocarbons
- C10-11 aromatic hydrocarbons
- C12-15 alkane/cycloalkane/aromatic hydrocarbons
- Carvacrol
- Cedrenol
- Cherry flavor
- Chlorosalicylic acid
- Cumin aldehyde
- Cyclamen aldehyde
- Cyclohexyl acetate
- Cyclopentadecanone
- *trans-trans*- δ -Damascone
- 2,3-Dihydro-2,2,6-trimethylbenzaldehyde
- Dimethyltetrahydro benzaldehyde
- Disteardimonium hectorite
- Ethylene dodecanedioate
- Ethylhexyl salicylate
- Eucalyptol
- Fluorosalan
- Heliotropine
- Hydroxycitronellol
- Hydroxypropyltrimonium lemon protein
- Isoamyl salicylate
- Isolongifolene ketone
- Isolongifolene epoxide
- L-Menthhol
- Lichen extract
- Methyl salicylate
- Methoxycitronellal
- Methoxytrimethylheptanol
- Methyl *p*-anisate
- Methyl cinnamate
- Methyl dihydrojasmonate
- Methylene dioxyphenyl methylpropanal
- Methylionantheme
- Methylrosanilinium chloride
- 5-Methyl- α -ionone
- Methyl octine carbonate
- Musk derivatives
- Myrcene
- Myrtenol
- Nerol
- Nerolidol
- Nopyl acetate
- Peach flavor
- Phenethyl alcohol
- Phenylacetaldehyde
- Phenylpropanol
- Phytol
- Propolis extract/cera/wax
- Rhodinol
- Salicylaldehyde
- Sesquiterpene lactone/*Compositae*
- Strawberry flavor
- *trans*-Rose ketone-5
- Usnic acid

Botanicals/Essential Oils:

- *Abies alba/balsamea/sibirica* oil/extract
- *Achillea millefolium* extract/water/oil
- *Acmella oleracea* extract
- *Acorus calamus* root oil
- *Ambrosia peruviana* leaf extract
- *Amomum aromaticum* fruit extract
- *Amyris balsamifera* bark oil
- *Anacyclus pyrethrum* root extract
- *Androsace umbellata* extract
- *Anethum graveolens* (dill) leaf powder
- *Aniba roseodora* (rosewood) wood extract/oil
- *Anthemis nobilis* (chamomile) flower extract/oil/powder/water
- *Arctium lappa/majus/minus* root/seed extract/powder/oil/water
- *Arnica chamissonis/montana* flower extract/water
- *Artemisia* species
- *Aster* species
- *Bellis perennis* (daisy) extract
- *Calendula officinalis* extract/flower/oil
- *Coriandrum sativum* (coriander) oil/extract
- *Curcuma aromatica* extract/oil/water
- *Cymbopogon* species
- *Cynara cardunculus/scolymus* oil/extract
- *Dahlia variabilis* flower extract
- *Delphinium consolida* flower extract
- *Echinacea angustifolia/pallida/purpurea* extract/cell culture/juice/water
- *Gardenia floridal/jasminoides/tahitensis* extract/oil
- *Gaultheria procumbens* (wintergreen) oil
- *Geranium* species
- *Hibiscus rosa-sinensis* extract
- *Hyacinthus orientalis* extract
- Hydrogenated bisabolol/peach kernel/*Rosa canina* fruit oils
- *Illicium verum* fruit oil
- *Impatiens balsamina* extract
- *Inula helenium* extract
- *Jasminum sambac* flower extract/water/wax
- *Juniperus virginiana/mexicana* (red cedar)

(Continued on next page)

TABLE 2. (Continued)

- <i>Calotropis procera</i> callus extract	- <i>Lactobacillus</i> ferment extract
- <i>Carum carvi</i> (caraway) seed oil/extract	- <i>Lavandula</i> species
- <i>Cedrus atlantica</i> bark oil/extract/water (cedarwood)	- <i>Leonurus artemisia</i> powder
- <i>Cedrus deodara</i> wood/seed oil/extract	- <i>Litsea cubeba</i> oil
- <i>Cedrus libani</i> bark/bud extract	- <i>Lonicera caprifolium</i> flower extract
- <i>Centaurea cyanus</i> flower extract	- <i>Magnolia champaca</i> flower oil/water
- <i>Chamomilla recutita</i> (matricaria) flower extract/oil/powder/water	- <i>Matricaria maritima/recutita</i>
- <i>Chrysanthemum</i> species	- <i>Melaleuca</i> species
- <i>Cichorium intybus</i> flower/leaf/root extract	- <i>Melilotus officinalis</i> extract/water
- Clary amber oil	- <i>Melissa officinalis</i> extract/oil/water/powder
- <i>Commiphora myrrha</i> resin/extract/oil/water	- <i>Mentha</i> species
- Coneflower extract	- <i>Michelia champaca</i> flower extract/oil
- <i>Copaifera officinalis</i> resin	- <i>Myrrhis odorata</i> extract
- <i>Origanum vulgare</i> (oregano) oil/extract/leaf/water	- <i>Ocimum basilicum</i> (basil) oil/water/extract/powder
- <i>Pelargonium</i> species	- <i>Solidago canadensis/odora/virgaurea</i> extract
- <i>Peucedanum graveolens</i> (dill) extract	- <i>Stellaria media</i> (chickweed) extract
- <i>Pimenta</i> species	- <i>Tagetes erecta/patula</i> extract/oil
- <i>Pinus</i> species	- <i>Tanacetum parthenium/cinerariifolium/vulgare</i> leaf/flower/stem juice/extract
- <i>Pogostemon cablin</i> (patchouli)	- <i>Taraxacum officinale/platycarpum/sinicum</i> extract/root
- <i>Prunus persica</i> (peach) extract/powder/water/oil	- <i>Thymus</i> species
- <i>Pseudotsuga menziesii</i> (balsam Oregon) oil/resin	- <i>Tilia</i> species
- <i>Ravensara aromatica</i> oil	- <i>Trifolium pratense/repens</i> extract/powder
- <i>Rosmarinus officinalis</i> (rosemary) leaf oil/extract/wax/water/powder	- Turpentine peroxide
- <i>Salvia</i> species (sage) oil	- <i>Vetiveria zizanioides</i>
- <i>Santalum album</i> (sandalwood)/ acuminatum/austrocaledonicum	- <i>Wedelia calendulacea</i> extract
	- <i>Zingiber aromaticus/officinale</i> extract/oil/root/water

Choosing this category will exclude from the product list everything in Table 1 as well as agents listed here. Note that this list is nonexhaustive, as new compounds may be added to this restrictive category as they are brought to the attention of CAMP. Flavors not associated with allergens in the standard category would be eliminated in this category.

INCI, International Nomenclature of Cosmetic Ingredients.

that would be eliminated by selecting the restrictive category. Hence, in choosing the restrictive option, all fragrances in both Table 1 and Table 2 would be eliminated. It should be noted that the number of fragrances included in this more restrictive category will likely grow as more botanicals and other fragrances are discovered that are being used in personal care products.

A clear categorization into these 2 distinct groups allows dermatologists to make tailored clinical decisions on the level of avoidance recommended based on the patient's history and patch test results.

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