

# Bisabolol

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**Bisabolol is an active plant extract isolated from German chamomile and thought to have antiinflammatory and skin-soothing properties. It is a common additive in many products, including moisturizing creams and ointments, lotions, cleansers, sunscreens, antiperspirants, and makeup products. Contact dermatitis from bisabolol has been reported in Europe and is purported to occur in the United States. Patch testing with bisabolol-containing products or bisabolol may be useful in the work-up of patients with presumptive allergic contact dermatitis or potentially worsening atopic dermatitis. Patients sensitized to bisabolol should be counseled to avoid any bisabolol-containing products.**

CHAMOMILE is a traditional medicinal herb found in western Europe, India, western Asia, and the United States. German chamomile is used medicinally in wound healing and for treating numerous ailments, including sleep disorders, anxiety, gastrointestinal conditions, oral mucositis, and atopic dermatitis. One of the primary active ingredients of German chamomile is alpha-bisabolol (bisabolol), which was isolated in 1951.<sup>1</sup> Also known as levomenol, bisabolol is a monocyclic sesquiterpene alcohol derived from *Matricaria chamomilla* (German chamomile), a member of the Compositae family. Notably, it accounts for almost 50% of the essential oil derived from the plant. As a sesquiterpene alcohol, it is structurally similar to sesquiterpene lactones, which increases the potential for cross-reactivity.<sup>2</sup>

Bisabolol ranges from colorless to pale yellow and is a slightly viscous liquid with a floral scent. It is thought to have skin-soothing, antiinflammatory, and antimicrobial properties although there is little evidence and few studies to support these claims. Bisabolol is used for flavoring liquids and coloring foods and as an additive in cosmetics. In addition to being extracted from plants, bisabolol can be made synthetically and has been shown to enhance the absorption of other chemicals topically.<sup>3</sup> Because of its claimed antiinflammatory properties, manufacturers include bisabolol in several cosmetics and emollients intended to soothe dermatitic skin. It is included in over 1,000 products such as moisturizers, cleansers, makeup products, eye creams,

antiperspirants, and sunscreens.<sup>4</sup> Table 1 lists some consumer and prescription products that contain bisabolol.<sup>4</sup>

With the increase in the number of “natural” ingredients in cosmetic products, allergic contact dermatitis (ACD) from plant extracts is increasingly recognized. Simpson and colleagues reported that 47.6% of patients with known ACD had a relevant positive reaction to at least one of the 47 botanical extracts tested.<sup>5</sup> In 1995, Wilkinson and colleagues reported a case of periorbital swelling associated with bisabolol (the patient was patch-tested with bisabolol 1% in petrolatum [purity, 87–93%]).<sup>6</sup> In 2008, Pastor and colleagues described a second case of contact cheilitis due to lipstick containing bisabolol (the patient was patch-tested with bisabolol 5% in petrolatum).<sup>7</sup> This year, Jacob and Hsu reported three cases of children with recalcitrant atopic dermatitis that worsened on treatment with Aquaphor (Beiersdorf Inc, Hamburg, Germany). Patch testing with lanolin and Amerchol L-101 yielded negative results, suggesting that bisabolol might be the associated allergen.<sup>8</sup>

On the World Wide Web, some companies are claiming that bisabolol is nonallergenic.<sup>9–11</sup> They are openly selling bisabolol to consumers with suggestions to add bisabolol to creams, lotions, and other formulations,<sup>9,10</sup> recommending a bisabolol concentration of 0.1 to 0.5% per cream or lotion.<sup>9</sup> Not only are these claims incorrect, as allergy has been substantiated, the ability of consumers to add bisabolol at much higher concentrations to any of their products puts them at risk. Physicians need to be aware of the potential allergenic nature of bisabolol and should help guide patients in avoidance as necessary.

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**Table 1.** Examples of Products Containing Bisabolol or Alpha-Bisabolol

| <i>Product Type</i> | <i>Product (Indication)</i>                                          | <i>Manufacturer</i>                        |
|---------------------|----------------------------------------------------------------------|--------------------------------------------|
| Therapeutic         | Aquaphor Healing Ointment (atopic dermatitis, wound healing)         | Beiersdorf AG (Hamburg, Germany)           |
|                     | Atopiclair (atopic dermatitis)                                       | Graceway Pharmaceuticals (Bristol, TN)     |
|                     | Sebclair (seborrheic dermatitis)                                     | Sinclair Pharmaceuticals Ltd. (Surrey, UK) |
| Moisturizer         | Purpose Moisturizer, Fragrance Free                                  | Johnson & Johnson (New Brunswick, NJ)      |
|                     | Neutrogena Healthy Defense Daily Moisturizer SPF 30                  | Neutrogena Corporation (Los Angeles, CA)   |
|                     | Dove Essentials Sensitive Skin Facial Lotion                         | Unilever (Rotterdam, the Netherlands)      |
|                     | M.D. Forté Replenish Hydrating Cream                                 | Allergan, Inc. (Irvine, CA)                |
|                     | Eucerin Dry Skin Therapy Plus Intensive Repair Creme                 | Beiersdorf AG (Hamburg, Germany)           |
| Facial Cleanser     | Neutrogena Extra Gentle Cleanser                                     | Neutrogena Corporation (Los Angeles, CA)   |
|                     | md Formulations Facial Cleanser, Sensitive Skin Formula              | Bare Escentuals (San Francisco, CA)        |
| Sunscreen           | Clinique Super City Block Oil Free Daily Face Protector, SPF 25      | Clinique Laboratories, LLC (New York, NY)  |
|                     | Aveda Daily Light Guard, SPF 15                                      | Aveda Corporation (Blaine, MN)             |
| Makeup              | L'Oréal Endless 8-Hour Lipcolor                                      | L'Oréal (Clichy, France)                   |
|                     | Revlon Colorstay Makeup with SoftFlex for Normal/Dry Skin            | Revlon Inc. (New York, NY)                 |
|                     | Neutrogena Healthy Skin Glow Sheers, SPF 30                          | Neutrogena Corporation (Los Angeles, CA)   |
|                     | Estée Lauder Maximum Cover Camouflage Makeup for Face & Body, SPF 15 | Estée Lauder Inc. (New York, NY)           |

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