

Cinnamal allergy

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Cinnamal, also known as cinnamaldehyde, is a commonly used fragrance and flavouring agent. It can also be a component of fungicides, insecticides, and animal repellents. It is also present to a greater or lesser extent in a range of natural products, including essential oils, e.g., Myroxylon Pereirae Resin (balsam of Peru), Myroxylon Balsamum Balsam Oil (Tolu balsam), and Cinnamomum Zeylanicum Leaf Oil (cinnamon oil).

Synonyms and names in other languages

2-Propenal-3-phenyl; 3-Phenyl-2-propen-1-al; 3-Phenyl-2-propenal; 3-Phenyl-2-propenaldehyde; 3-Phenylacrolein; 3-Phenylacrylaldehyde; 3-Phenylpropenal; Aldehyd cynamony; Benzylideneacetaldehyde; CAS 104-55-2; Cassia aldehyde; Cinnamal; Cinnamic aldehyde; Cinnamyl aldehyde; EC 203-213-9; Phenyl-2-propenal; Phenylacrolein; Zimtaldehyd

Clinical symptoms of cinnamal allergy

In most cases cinnamal causes skin inflammation (allergic contact dermatitis or eczema) limited to areas directly exposed to cinnamal by skin contact. Typical symptoms of cinnamal allergy include patches of itchy rash in the area of contact with products or natural substances containing cinnamal, including some medicinal products, cosmetic / toiletry products, foods, and spices. Perioral leukoderma (depigmentation simulating vitiligo) from use of toothpaste containing cinnamic aldehyde was reported by Mathias et al. (1980).

Cinnamal in cosmetic products / toiletries

Cinnamal is to be found in a range of cosmetic products, including balms, creams, soaps, emulsions, shower gels, bath foams, toothpastes, mouthwashes, and dental flosses. According to [Regulation \(EC\) No 1223/2009](#) on cosmetic products, Annex III, item 76, the presence of cinnamal must be indicated in the list of ingredients when its concentration exceeds 0.001% in leave-on products or 0.01% in rinse-off products.

- INCI: Cinnamal

Over 500 cinnamal-containing cosmetic products and toiletries can be found listed on [INCIDecoder](#)

INCI: International Nomenclature of Cosmetic Ingredients — In the UK, the European Union, and in other global regions, manufacturers of cosmetic products are legally required to list ingredients on product labels / packaging using standardised INCI nomenclature. The [Personal Care Products Council](#) cautions that "The designation of an INCI name for a cosmetic ingredient is an essential part of ingredient identification; however, the assignment of an INCI name does not mean that the ingredient has been approved for cosmetics."

Cinnamal in medicinal products

Medicinal products may contain cinnamal as a fragancing additive. The presence of cinnamal is disclosed in the following:

- Dicziaja™ gel
- Nizoral® 20 mg/g shampoo
- There may be others – please always check the composition of the product you are going to use or ask your doctor, pharmacist or other health care professional

Cinnamal in household products

Cinnamal can be used for scenting a variety of household products, e.g., detergents, fabric softeners, air fresheners, or scented candles.

Cinnamal in food

Cinnamal may be an additive or natural component in sweets, ice creams, soft drinks, chewing gums, and cakes. It is also present in spices, and in particular in cinnamon. It is identical with the cinnamal present in cosmetics, therefore, people with allergic contact dermatitis caused by external exposure to cinnamal could also develop contact eczematous reactions to cinnamal in food depending on the total amount and concentration. Systemic reactivation of allergic contact dermatitis (i.e. hematogenous contact eczema, where, following absorption, the hapten is carried by the blood to other parts of the body) may also occur following ingestion of food containing cinnamal. Such hematogenous eczema following ingestion of balsam of Peru, which contains cinnamal, has been reported ([Erdmann & Werfel 2006](#)). Such reactions were referred to as SRACD – systemic reactivation of allergic contact dermatitis – by [Spiewak \(2011\)](#).

Available diagnostic methods and materials

At present, the only validated method of detecting cinnamal allergy is patch testing performed in line with current guidelines from national or international scientific societies, e.g., European Society of Contact Dermatitis. Patch test material available for testing includes:

- Cinnamal 1% pet. [Chemotechnique Diagnostics, cat. number **C-014**]
- Fragrance Mix I 8% pet. [Chemotechnique Diagnostics, cat. number **Mx-07**] – in European Baseline Series and many other series; contains cinnamal 1% as one of its 8 ingredients.
- Fragrance Mix 500 µg/cm² of **Panel 1.3 of T.R.U.E. Test®** contains cinnamal (cinnamaldehyde) at 41 µg/cm² among its 8 ingredients. Comparative studies have shown that its detection rate is lower than for Fragrance Mix I 8% pet. (**Lazarov et al. 2007**).

Positivity rate

0.7-2.2% of patients undergoing patch testing due to chronic, recurrent eczema (**Schnuch et al. 2007**, **Uter et al. 2010**).

Cross-reactivities, co-positivities, and co-sensitizations

Cinnamal (cinnamaldehyde) is present in Myroxylon Pereirae Resin (balsam of Peru), Myroxylon Balsamum Balsam Oil (Tolu balsam), cinnamon oils, e.g., Cinnamomum Zeylanicum Leaf Oil, oil of hyacinth, etc. Cinnamal constitutes up to 92% of Cinnamomum Cassia Bark Oil and up to 55% of Ceylon Cinnamon Bark Oil (**De-Montijo-Prieto et al. 2021**). Cross-sensitivities to cinnamic aldehyde were considered by **Collins & Mitchell (1975)**.

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