

Short Communication

Occupational allergic contact dermatitis due to curcumin food colour in a pasta factory worker

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Case Report

A 59-year-old woman was referred with acute contact dermatitis of the hands and forearms. For 2½ years, she had been employed in a factory manufacturing macaroni and spaghetti. The mixture of flour, water and bulking agent (Veron Bake, Röhm, Germany) additionally contained food colours BC-200-WSS (β -carotene), curcuma yellow-WS-P and T-PT8-WS (curcumin), all from Chr. Hansen, Denmark. For 6 months, her job had been to add these colours and collect the hot pasta from the forming machine. She did not wear protective gloves. The patient maintained that her condition deteriorated when she ate some of the spaghetti. She was hospitalized and treatment resulted in sufficient improvement for her to return to her job. After several days back at work, her symptoms reappeared.

Clinical examination showed edematous erythema, papules and vesicles, with itching, on the dorsa of her hands and forearms. She was patch tested with the European standard, fragrance, and bakery series (Chemotechnique Diagnostics, Malmö, Sweden) and with cur-

cumin, curcuma, β -carotene, curry and ginger powders, vitamin A, and bulking agent. The tests were carried out according to ICDRG recommendations. As a control, 30 volunteers were also tested with 10% curcuma, curry, ginger, β -carotene, 1% curcumin, and vitamin A, and none was positive. Table 1 gives the positive results of the patch tests. The patients were also prick tested with vegetable pollen, house dust, *Dermatophagoides pteronyssinus* and *Dermatophagoides farinae*, goose and duck feathers, dog and cat hair, wheat and rye flour, and with

Table 1. Positive patch test results

Allergen in pet.		D2	D4
curcumin	1%	+++	+++
	0.1%	+++	+++
	0.01%	++	++
	0.001%	++	++
curcuma	10%	+++	+++
	1%	+++	+++
	0.1%	+++	+++
curry powder	10%	+++	+++
	1%	++	+++
ginger powder	10%	++	++
	1%	+	+
cinnamic alcohol	2%	+	+
cinnamic aldehyde	1%	++	++
isoeugenol	2%	+	+

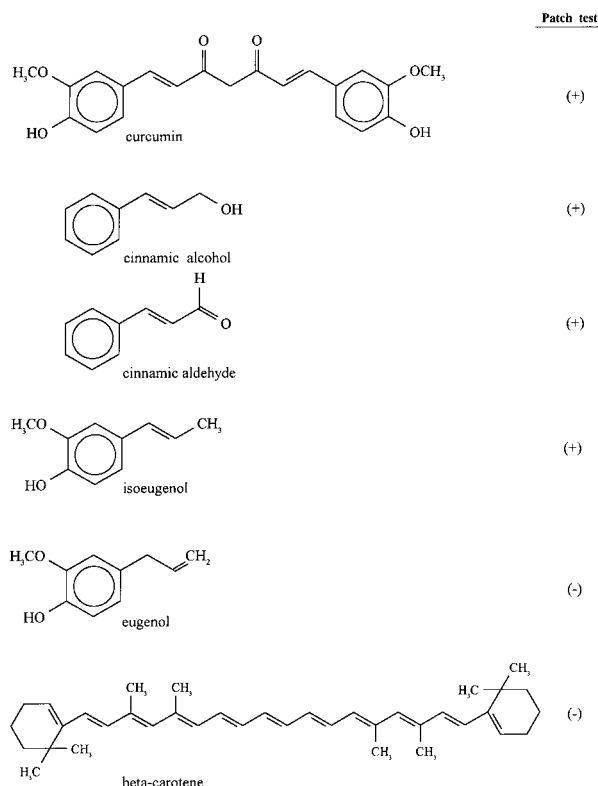


Fig. 1. Chemical structures.

a spice blend containing curcuma (Allergopharma, Joachim Ganzer KG, Germany). The results of the prick tests were negative (total IgE=5.31 kU/l).

Discussion

Hypersensitivity to spices is quite common in those with Type-I allergy (1, 2). Occupational allergy to the spices associated with Type-IV allergy is less frequent. Cases of such allergy to garlic, cinnamon, ginger and paprika have been reported (3). *Curcuma longa* and *Zingiber officinale* belong to the same family of tropical vegetables. Dried and powdered rootstocks of these plants are used as spices (turmeric and ginger). Both are included in curry spice blend. Curcuma rootstock contains strong-aroma volatile oil and curcumin, a yellow dye. Curcumin is used to colour food products, such as butter, margarine, cheese, spaghetti, macaroni, and liqueurs.

2 reports of contact dermatitis from turmeric could be found in the literature available. Goh & Ng (4) reported a case of occupational dermatitis in a spice dealer caused by curry powder and *Curcuma longa*. Hata et al.(5) reported a case of contact dermatitis due to curcumin in a Chinese topical medicament (*Chuu-ou-kou*). Our patient was positive to very low concentrations of curcumin (0.001%), curcuma, curry spice blend contain-

ing *Curcuma longa*, and powdered ginger, which belongs to the same family of plants as *Curcuma longa*. Just like patients in the reports of the Japanese authors, our subject had positive patch tests to cinnamic alcohol and cinnamic aldehyde (5). Furthermore, she reacted to isoeugenol without being positive to eugenol. Curcumin, cinnamic alcohol, aldehyde and isoeugenol are similar in their structure. The chemical structure of eugenol is slightly different, while β -carotene belongs to a different group of chemical compounds altogether (Fig. 1).

References

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