

mentation, and a similar reaction after aspirin) and for that reason prick and intradermal tests were programmed as previously recommended (4). However, an unsuspected widespread FDE appeared after the intradermal application of a small dose of the drug. There is only one case in which such a small dose as the one presented in a patch test elicited a generalized reaction (5). Even though initial episodes occurred without hyperpigmentation, it was evident after this test, ruling out nonpigmented fixed exantemas as previously described with this drug (6). It is evident from this case that prick and intradermal tests can elicit systemic reactions and delayed readings are recommended before oral challenge tests, especially in those patients with clinical history not clearly defined.

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References

1. Lee AY. Fixed drug eruptions. Incidence, recognition, and avoidance. *Am J Clin Dermatol* 2000;**1**:277–285.
2. Lammintausta K, Kortekangas-Savolainen O. The usefulness of skin tests to prove drug hypersensitivity. *Br J Dermatol* 2005;**152**:968–974.
3. Ozkaya-Bayazit E. Specific site involvement in fixed drug eruption. *J Am Acad Dermatol* 2003;**49**:1003–1007.
4. Borja JM, Galindo PA, Gómez E, Feo F. Delayed skin reactions to metamizole. *Allergy* 2003;**58**:84–85.
5. Gonzalo-Garijo MA, De Argila D, Rodríguez-Nevado I. Generalized reaction after match testing with metamizole. *Contact Dermatitis* 2001;**45**:180.
6. Quiñones Estévez D, Fernández Schmitz C. Exanthema to metamizole. *Allergy* 2001;**56**:262–263.

Type I allergic reaction to benzimidazole antihelmintics

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Key words: drug allergy; urticaria.

Antihelmintics are widely used in tropical areas, but also prescribed in Western countries. Benzimidazole derivatives (BNZD) are used to treat broad-spectrum helminthic infections. The benzimidazole nucleus is an important heterocyclic ring (Fig. 1), because of its synthetic utility and broad range of pharmacological activities. Some BNZD with different pharmacological effects, including antifungal, antihelmintic, anti-HIV, antihistaminic, antiulcer, cardiotonic, antihypertensive and neuroleptic, are in clinical use.

Antihelmintic (also spelled anthelmintic) is a chemical substance used to expel or destroy tapeworms in domestic animals and in humans. Some common antihelmintic active ingredients classified by chemical structure include amongst others, benzimidazoles. These are: albendazole, fenbendazole, mebendazole, oxfendazole, oxibendazole and triclabendazole. They work by inhibiting glucose uptake in the parasite, resulting in immobilization and death. Allergic reactions to these drugs are rare (1).

A 52-year-old woman suffering from acute parasitic infection took the first dose of mebendazole (100 mg) and 2-h later developed acute generalized urticaria. Afterwards, omeprazole – another BNZD – has been well tolerated by the patient.

Immediate hypersensitivity to mebendazole and albendazole.

After obtaining written informed consent, we performed skin prick test (SPT) and intradermal tests (IDT) and simple-blind oral challenge test with mebendazole and albendazole.

Skin prick test and IDT (0.1–0.01 mg/ml) were negative with mebendazole. Oral challenge with mebendazole gave a positive reaction after 90 min of taking 75 mg. The patient developed itching and wheal flares located on her forearms. She was treated with i.m. methylprednisolone and dexchlorpheniramine improving in 1–2 h.

Skin prick test and IDT (0.1–0.01 mg/ml) were negative with albendazole. Seven hours after taking 400 mg, the patient developed identical lesions in trunk. The patient was treated as previously described and recovered within 1 h.

Mebendazole and albendazole-specific IgE was not detectable with the available laboratory techniques.

The absence of cross-reactivity between mebendazole, albendazole and other BNZD, except omeprazole, could not be excluded because the patient refused to continue the study.

To our knowledge, this is the first case of immediate hypersensitivity to mebendazole and albendazole documented up to date. In the review of the literature, fixed drug eruptions were the most common reactions described with drugs of this group (2–6). In our patient, cutaneous test were not useful for the diagnosis. Mebendazole and albendazole-specific IgE was not detectable with the available laboratory techniques. We think these results do not exclude the responsibility of the drug or an IgE mediated mechanism.

In our case, clinical history, physical examination and provocation tests allow us to establish the diagnosis of hypersensitivity to mebendazole with cross reactivity with albendazole. Cross reactivity between omeprazole, mebendazole and albendazole was not observed. Cross reactivity with other BNZD could not be excluded. More studies are needed to demonstrate cross reactions among BNZD.

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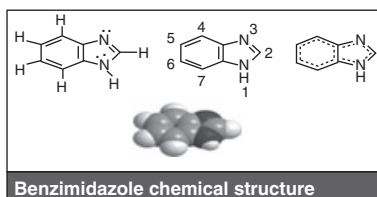


Figure 1. Benzimidazole nucleus.

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References

1. Bagheri H, Simiand E, Montastruc JL, Magnaval JF. Adverse drug reaction to antihelmintics. *Ann Pharmacother* 2004;**38**:383–388.
2. Mahboob A, Haroon TS. Fixed drug eruption with albendazole and its cross-sensitivity with metronidazole – a case report. *J Pak Med Assoc* 1998;**48**: 316–317.
3. Macedo NA, Pineyro MI, Carmona C. Contact urticaria and contact dermatitis from albendazole. *Contact Dermatitis* 1991;**25**:73–75.
4. Chen KT, Twu SJ, Chang HJ, Lin RS. Outbreak of Stevens-Johnson syndrome/toxic epidermal necrolysis associated with mebendazole and metronidazole use among Filipino laborers in Taiwan. *Am J Public Health* 2003;**93**:489–492.
5. Gonzalo-Garjón MA, Jimenez-Ferrera G, Bobadilla-Gonzalez P, Cordobes-Duran C. Hypersensitivity reaction to mizolastine: study of cross reactions. *J Investig Allergol Clin Immunol* 2006;**16**:391–393.
6. Thami GP, Kanwar AJ. Fixed drug eruption due to metronidazole and tinidazole without cross-sensitivity to secnidazole. *Dermatology* 1998;**196**:368.

Atopy, wheeze and bronchial responsiveness in young chilean adults. Do dietary antioxidants matter?

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Key words: antioxidants; asthma; atopy; bronchial responsiveness; flavonoids.

The current high prevalence of asthma may be related to the dietary pattern observed in many western countries, characterized by lower consumption fish,

fresh fruits and vegetables rich in antioxidants, accompanied by high consumption of foods rich in saturated fatty acids, sugars and salt (1). This study assessed whether the intake of specific dietary antioxidants is associated with the prevalence of asthma, bronchial responsiveness (BHR) and atopy in a population of young adults from Chile.

A total of 1192 adults born between 1974 and 1978 in Limache, a semi-rural area of Central Chile participated in the study. They responded to a Spanish version of the European Community Respiratory Health Survey (ECRHS) questionnaire (2), were skin tested with eight allergens, and challenged with increasing concentrations of methacholine (0.5, 1.00, 4.00, 8.00 and 16 mg/ml) to assess BHR. Dietary intake of antioxidant foods, vitamins, minerals and flavonoids was assessed with a food frequency questionnaire.

Wheeze in the last 12 months, BHR and atopy were the primary outcome measures. BHR was expressed as a continuous measure, the least squares concentration-response slope (3). An increasing slope indicates a worsening BHR. Most food items were studied as the continuous increase in 100 g of their consumption, and garlic was analysed as per 10 g of increase. Nutritional variables were log-transformed and results of logistic regression analyses expressed as per-doubling odds ratio. Total catechins, flavonols and flavones were grouped into quintiles and results presented as trend per quintile. Multiple logistic regression was carried out to test associations between wheeze in the last 12 months, atopy and the exposures, adjusting for confounders [sex, age, current smoking, overcrowding, number of years of education, socio-economic status, weight at birth, body mass index (BMI) and total energy intake (TEI)]. Multiple linear regression analyses were carried out to test associations between BHR and exposure, further adjusting for the confounders forced expiratory vol-

ume (FEV₁) percentage predicted (FEV₁%), the ratio between FEV₁% and the forced vital capacity (FVC), FEV₁%/FVC and atopy (4).

The median BMI was close to 25 cut-off point in the participants. Respiratory symptoms were more common in women than in men with the exception of wheeze. A 25% of participants were sensitized to at least one allergen. BHR prevalence (20% fall in FEV₁ at a concentration of methacholine of up to 16 mg/ml), was twice as common in women. Mean consumption of fresh fruits and vegetables, as well as of all antioxidant nutrients, met or was above the recommended values. Intake of polyunsaturated fatty acids reached the recommended values. The ratio omega 6/omega 3 was 47 : 1.

Very few associations of statistical significance were found between outcomes studied and dietary antioxidants (Table 1). Being atopic was negatively associated with per-doubling intake of omega 3 fatty acids, and with per-quintile increase in intake of catechins. BHR slope was negatively associated with per-doubling intake of vitamin C and garlic. Unexpectedly, a positive association was found between selenium intake and BHR.

This is the first population-based study carried out in a Latin American country assessing the association between dietary intake and several outcomes related to asthma. The few findings here reported lend further support to the current lack of evidence for an eventual beneficial effect of dietary antioxidants on asthma (5). However, the results of this study are suggestive of a beneficial effect of garlic in BHR as well as of catechins in atopy, findings which deserve further research. We also found a modulator effect of an unbalanced intake of omega 6 and omega 3 on the sensitization status of the individual.

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