

laxis to snake venom has been underestimated (6). This condition, which has not been addressed as promptly as it should be, can be a contributing factor to fatal snakebites in endemic regions, apart from the toxicity of the venom itself (6).

In conclusion, recognition of potentially life-threatening allergic reactions to *Bothrops* snake envenomation is important in therapeutic decisions. Aggressive therapy against anaphylaxis should be combined with the standard approach to envenomation.

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Anaphylaxis after Oseltamivir (Tamiflu®) therapy in a patient with sensitization to star anise and celery-carrot-mugwort-spice syndrome

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Key words: anaphylaxis; celery-carrot-mugwort-spice syndrome; Oseltamivir; star anise.

A 51-year-old man reported on an anaphylactic reaction following therapy for 5 days with Oseltamivir phosphate (Tamiflu®; Roche, Grenzach-Wyhlen, Germany). Seven hours following the intake of the last Oseltamivir pill, the patient experienced cough, conjunctivitis, angioedema and airway constriction. He was successfully treated with prednisolone and Clemastin. The proton

Anaphylaxis after Oseltamivir (Tamiflu®) in a patient sensitized against Chinese star anise.

pump inhibitor Esomeprazol (Nexium® mups; AstraZeneca, Wedel, Germany), which was concomitantly taken for reflux esophagitis could be excluded as a causative agent, because it was repeatedly tolerated subsequently.

Prick testing of Oseltamivir revealed a reproducible positive reaction after 30 min (Fig. 1A). Chinese star anise (*Illicium verum*) was 2+ after 30 min (Fig. 1B). In further prick testing, positive reactions were found for mugwort pollen 3+, anise 2+ (*Pimpinella anisum*), carrot 1+, celery 2+, parsley 1+ and house dust mites 1+ (Fig. 1A). Prick test showed negative results for cat epithelium, peanut, hazelnut, walnut, and the pollen of grass, rye, alder, birch, hazelnut, and plantain. A star anise fruit was used for 'prick to prick' skin test. None of the food allergens, connected with the food consumed prior to the anaphylactic reaction, tested positive.

We report a case of spontaneous hypersensitivity reaction to Oseltamivir phosphate in a patient with Chinese star anise (*I. verum*) sensitization. Although anaphylactic reactions to Oseltamivir have been reported (1), to our knowledge no spontaneous allergy to Oseltamivir and especially no cross-

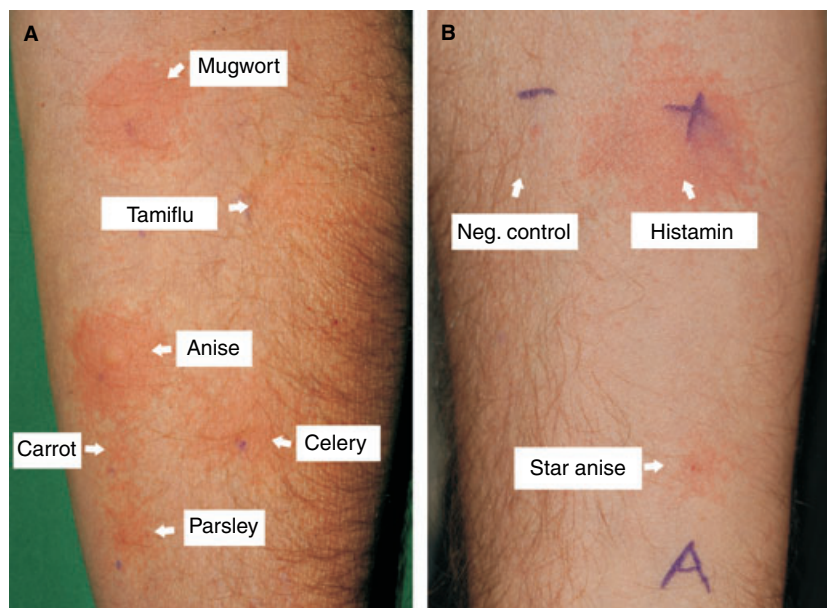


Figure 1. Skin prick test results showing the typical constellation for a 'celery-carrot-mugwort-spice syndrome' with additional sensitization to Chinese star anise and Tamiflu®. (A) Skin prick testing was performed for mugwort pollen (*Pimpinella anisum*), carrot, celery, parsley and Tamiflu® and (B) Chinese star anise (*Pimpinella anisum*), positive control (histamine) and negative control 0.9% saline solution.

reactions in patients with spontaneous sensitization for star anise or 'celery-carrot-mugwort-spice syndrome' has been reported.

Oseltamivir is synthesized in a multi-step procedure from shikimic acid, which is extracted from the Chinese star anise fruit growing on the small evergreen *I. verum* tree native to Southwest China (2, 3). Star anise is one of the ingredients of the famous five spice powders used in Chinese cuisine. Star anise is utilized to substitute the more expensive European anise in bakery or for the production of anise liquors. Furthermore, star anise fruits are now frequently observed as decoration articles during winter time. According to certain reports, star anise seems to induce mostly allergic contact dermatitis (4).

It has been shown experimentally that antigen-specific IgE production will occur at least 2 weeks after initial antigen exposure (5). In our patient, we therefore suppose that intake of Tamiflu® led to a boosting of pre-existing plasma cells to secrete specific IgE, which finally induced anaphylaxis. In this setting, it is impossible to determine whether these IgE antibodies detected an epitope that is conserved during the synthesis of Oseltamivir from shikimic acid or recognize amounts of star anise components contained in the drug.

Up to 25% of the population in Europe suffers from atopy-associated diseases such as asthma, rhinoconjunctivitis, food allergy, urticaria, and atopic dermatitis. Atopic patients are predisposed to develop IgE-mediated anaphylactic reactions. Besides sensitization against Chinese star anise, our patient presents with the constellation of the so-called 'celery-carrot-mugwort-spice syndrome,' which also includes cross-allergy to anise (*P. anisum*) (6). Cross-allergies between star anise and the botanically unrelated European anise have not been observed (4).

To date, neither the frequencies of sensitizations against components of Chinese star anise nor Oseltamivir are known. It seems worthwhile to investigate whether star anise sensitization is associated with other pollen-food syndromes. This case suggests that a 'celery-carrot-mugwort-spice syndrome' could be a possible risk factor for

Oseltamivir-associated hypersensitivity reactions.

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Atopic eczema and indoor climate: results from the children from Lübeck allergy and environment study (KLAUS)

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Key words: atopic eczema; epidemiology; exposure; house dust mite; indoor climate.

The prevalence of atopic eczema (AE) has increased in the past decades, espe-

cially in western industrialized countries (1). Besides a genetic predisposition, several environmental conditions may play a role as a contributing cause for the development and possibly for the increase of AE.

The exposure to house dust mite (HDM) allergen belongs to these trigger factors. The development of the atopy patch test allowed to document the meaning and clinical relevance of HDM allergen for the development of AE (2). Several intervention studies could show that the reduction in the HDM allergen exposure, e.g. by encasement, is accompanied by a marked reduction in the clinical severity (3). Furthermore, it is well known that an unfavourable indoor climate including a high humidity and mould growth, which could be the consequence of isolation and low ventilation, is associated with a higher HDM load and consecutively a higher prevalence of allergic sensitization and respiratory allergy (4–7). Less is known on the association between an unfavourable indoor climate or indoor HDM allergen exposure and the occurrence of an AE. We, therefore, aimed at investigating these associations within a population-based study in preschool children.

A cross-sectional study was conducted during the compulsory school entrance examinations in Lübeck, Germany, in 2003.

Relevant data including information on wet areas or moulds on the walls were obtained by questionnaire. A dermatological examination was performed, assessing AE on a clinical basis. Allergen exposure to HDMs was measured on the child's mattress using the semi-quantitative rapid test Bio-Check Allergen Control (Dräger, Lübeck, Germany). For this purpose, the sampling pin was wiped over a surface area of 0.1 m²; for 60 s. Subsequently, five drops of extraction buffer were applied to start the autonomous immunoanalytical process. Results were read after 10 min. Using allergen specific antibodies (Der p 2 and f 2), the exposure was classified into four categories (0–3), which reflected concentrations of 119,

The prevalence of atopic eczema and moulds increases with the exposure to house dust mites.