to kill mites (1–3). However, this is near the upper limit of settings typically recommended for hot water cylinders, and heat losses incurred during laundering mean the maximum reached in many domestic washing machines may well be considerably lower than this. It has been suggested that commercial laundering might be better able to provide such conditions.

Temperatures reached during both commercial and domestic hot-laundering vary greatly, and influence mite survival.

Using dataloggers embedded in duvets, temperature profiles for five domestic washing machines were obtained and compared with those for two commercial machines. Heat-escape bioassays (2) and monoclonal enzyme-linked immunosorbent assay (ELISA) of vacuumed dust from nine used duvets, were also used to determine reductions in mite and Der p I levels after commercial laundering.

The maximum temperature experienced within duvets during laundering varied greatly (range: 32.5–61.9°C), as did the length of time it was sustained (Fig. 1). Mean Der p I levels of 4.6 μg/m^2 (95% CI: 1.7–7.5) and 34.4 μg/g (95% CI: 12.0–56.8) were determined in dust sampled from duvets prior to washing, and found to be significantly reduced ($P \leq 0.01$) by washing. Mean reductions of 99.5% (95% CI: 99.1–99.9) for Der p I per unit area, and 97.7% (95% CI: 95.9–99.5) per unit mass were recorded. However, only one commercial and two domestic machines (Com. m/c 1 and Dom. m/c 2 and 3) sustained wash temperatures greater than 55°C for more than 10 min, suggesting appreciable mite survival on some samples. Using the best performing machine (Com. m/c 1) a significant reduction ($P \leq 0.001$) in mite numbers (mean: 87.8%; 95% CI: 77.9–96.7) was demonstrated after laundering of used duvets. This result was unaffected by the incorporation of laundry detergent ($P > 0.05$).

The conclusions are:

- Commercial, and likely also domestic, hot-laundering results in near complete removal of mite allergen from bedding.

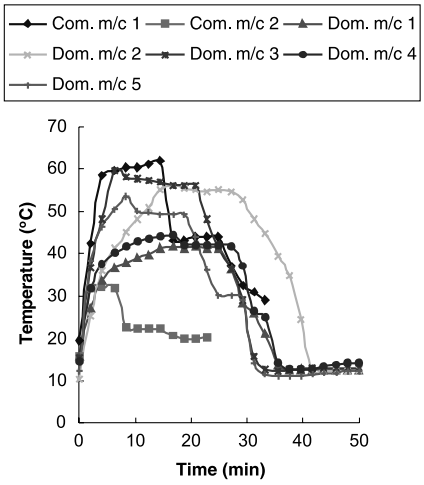

Figure 1. Temperature profiles obtained from commercial and domestic washing machines.

- A wash cycle where temperatures above 55°C are sustained for at least 12 min (or above 60°C for 8 min) is sufficient to eliminate >80% of mites.
- Considerable variation exists in the ability of both domestic and commercial machines to reach such temperatures, and this ability should be confirmed before recommending hot-laundering as a method of eliminating house-dust mites from textiles.

This research was supported by grants from the New Zealand Public Good Science Fund, Wellington, New Zealand and the RITS@WRONZ club. The latter is a grouping of NZ companies involved with the laundering, drycleaning, manufacturing, and retailing of textiles.

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Accepted for publication 6 February 2003
Allergy 2003: 58:531–532

ISSN 0105-4538

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Allergy to *Ailanthus altissima* (tree of heaven) pollen

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Key words: allergy; *Ailanthus altissima*; tree of heaven; skin-prick test; cross-reaction.

Ailanthus altissima L. (= *A. glandulosa*), family Sumaroubaceae, commonly known as 'tree of heaven', 'tree of sun' or 'Persian sumach', is a native of China and Malaysia, very common in Eastern Asia and introduced in Europe and in Italy. In the second half of 19th century it has been widely cultivated and used for the breeding of *Ailanthus*'s sphinx (*Bombyx cynthia*) in replacement of silkworm (*Bombyx mori*). *Ailanthus* is a deciduous plant, reaches 15–20 m in height and 70 cm in diameter, has a leafy foliage and a cylindrical trunk which soars without branches in the first tract. The polygamous flowers, white-yellowish or greenish, are gathered in dense racemose cymes and have, like the leaves, an unpleasant smell. The pollination is anemophilous and lasts from April to June. The pollen grain, 22–25 μm, has three pores, is isopolar, ovoidal or spherical. *Ailanthus* is rapid growing, easily adapted to various lands, to drought and to winter's cold, and is used as ornamental plant and on lands subject

The pollen of *Ailanthus altissima* (tree of heaven) is a new potential respiratory allergen.

to landslides, thanks to its robustness and its capacity to generate a great number of radical sprouts. The spreading of *Ailanthus* in Cagliari's district has led to high concentration of its pollen grains in April–June, as detected by the pollen trap. Although *Ailanthus* was mentioned in two ancient books of allergology (1, 2), has been ignored in the recent literature. The possible sensitization to *Ailanthus* pollen in patients suffering from allergic symptoms (rhinitis, asthma and conjunctivitis) in this season, which corresponds with the presence of many other pollens (grass, olive, *Parietaria*, plantain, amaranth) has been investigated. The pollen was collected from *Ailanthus* female trees in the Cagliari province, extracted overnight at 5% w/v in phosphate-buffered saline (PBS), centrifuged, the surnatant filtered on Millipore membranes and dialysed. The antigen was covalently bound to solid-phase polystyrene balls and tested by standard radioallergosorbent test (RAST) procedure (reagents Sferikit®, Lofarma SpA, Milan, Italy) with the sera of 54 randomly selected patients with allergic symptoms in April–June 2001. The same pollen was used to prepare a diagnostic extract for skin-prick testing according to standard procedure. The 54 patients were skin-prick tested with *Ailanthus* extract and other common commercial extracts (Lofarma SpA, Milan, Italy). Forty-two patients tested RAST-positive to common allergens, 10 tested RAST-positive also to *Ailanthus* extract, in class 1 or 2. The 10 *Ailanthus*-positive patients were skin-prick positive to other allergens also: six to *Dermatophagoides*, eight to grass, seven to *Parietaria* and six to olive pollen. Specific-IgE by RAST were positive in seven of 10 *Ailanthus*-positive patients, six in class I and one in class II.

These results suggest the possibility that a cross-reaction between *Ailanthus* and other pollens could explain the constant multisensitization observed in *Ailanthus*-positive patients.

In conclusion, the pollen of *Ailanthus* needs to be considered as a possible allergenic source, and its extract should be introduced in the diagnostic screening panels in areas where this tree is widespread.

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Accepted for publication 21 January 2003
Allergy 2003: 58:532–533

ISSN 0105-4538

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Egg allergy – to be or not to be boiled

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Key words: anaphylaxis; egg allergy; ovomucoid; raw egg; tolerance.

Children are frequently afflicted by food allergy. Hen's egg is among the most commonly implicated food, representing the second cause (30%) of food allergy in our outpatient clinic (1). Egg allergy usually decreases with age. However, anaphylactic reactions to raw eggs after negative challenges with cooked eggs have been described (2). In this report, four such cases have been verified.

Children presenting anaphylactic reactions to raw eggs while tolerating cooked eggs.

Case 1. This patient was a 5-year-old boy, with asthma and rhinitis. His first contact with egg, at 8 months, was followed by angioedema and generalized urticaria. The skin prick test (SPT) to egg was positive. He followed an exclusion diet until the age of 3 years when an open challenge with boiled egg was performed; its result was negative. Egg was introduced in his diet and there were no reports of reactions until 2 years later when, after eating scrambled eggs not properly cooked, he developed a generalized urticaria and labial angioedema.

Case 2. This patient was an 8-year-old boy, with a history of cow's milk allergy, atopic dermatitis, asthma and rhinitis. As sensitization to egg was identified by SPT, this food was strictly avoided. An open challenge with boiled egg was performed when he was 6 years old, which was negative. Later, although eating cooked eggs without any problem, he ate a dish containing raw egg, developing an anaphylactic reaction with laryngeal angioedema.

Case 3. This patient was a 3-year-old boy, with cow's milk allergy and atopic dermatitis. He had eaten cooked eggs since the first year of life with no symptoms, although he had a SPT positive to egg white. At 19 months of age, and after the ingestion of raw eggs, he developed generalized urticaria. He continues to eat boiled eggs without any reactions.

Case 4. This patient was a 9-year-old boy, with atopic dermatitis, asthma, and rhinitis and had fish, peach and nut allergy. He ate scrambled eggs for the first time at 8 months of age, developing urticaria and labial angioedema. SPT to egg was positive. This food was withdrawn from his diet until the age of 2.5 years; then, an open challenge with boiled egg was performed, which was negative. The food was allowed in his diet. Later, at 4 years of age, labial angioedema and facial urticaria was reported after the ingestion of raw egg.

These reports show that a negative follow-up challenge with cooked eggs is not a guarantee that complete tolerance has been achieved. Contrary to what was thought earlier, the major egg allergen, ovomucoid, is thermolabile, leading to a reduced IgE binding to its denaturated form (2), which can explain the described reactions. Nowadays, in our hospital, sequential challenges with cooked and raw eggs are performed, which allows the verification if tolerance has been achieved. If the food is tolerated only in its cooked form, the parents can be advised to strictly avoid meals containing raw eggs and give eggs well cooked. This advice goes to cases of mild to moderate reactions; if severe reactions occurred, avoiding eggs in all its forms is