

## **Effectiveness of laundry washing agents and conditions in the removal of cat and dust mite allergen from bedding dust**

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### **Abstract**

**Background:** There is limited information about the removal of allergens by laundry washing. **Objective:** The purpose of this investigation was to determine the dynamics of the removal of mite allergen (Der p 1) and cat allergen (Fel d 1) from bed dust during simulated laundry processes. **Methods:** Three studies were performed. The first compared combinations of 4 laundry agents (water alone, soap, detergent with enzymes, and detergent without enzymes), 4 temperatures (15°, 25°, 45°, and 60°C), and 3 extraction times (5, 20, and 60 minutes). The second study examined allergen extraction by 11 common brands of detergents at 25° and 45°C for 5 minutes. The third study compared 4 detergents containing enzymes before and after the denaturation of their enzymes. To measure the quantity of allergens extracted, each study used an ELISA assay as well as a more sensitive but semiquantitative Halogen immunoassay to detect any allergens remaining after the simulated laundry extraction. **Results:** Study 1 showed that detergents extracted more of both Fel d 1 and Der p 1 than either soap or water alone and that almost all allergens were extracted within 5 minutes at 25°. However, washing at 60°C extracted slightly more Fel d 1 and denatured Der p 1, resulting in lower residual amounts of both allergens. Study 2 showed that all of the commercial detergents performed similarly. Study 3 showed that the presence of enzymes in detergent formulations did not produce a significant effect on the extraction of allergens. **Conclusion:** Using detergent solutions at 25° for at least 5 minutes was sufficient to extract most mite and cat allergen from dust of bedding. (J Allergy Clin Immunol 2001;108:369-74.)