

Performance Evaluation Of A Rapid Test Method For Dust Mite Allergen Detection in the Home

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(J Allergy Clin Immunol 2000;105:S289)

The performance of devices to allow home evaluation of allergen exposure, the MITEST collector and the rapid test for mite group 2 allergens (RAPID), were compared to standard allergen assays. In twelve homes in Maryland and Pennsylvania, dust was collected from the bedroom floor, living room floor, bed, and soft furnishings using 4 separate collectors. Approximately 0.25 m² of surface was vacuumed for 2 min at each site; then the collectors were sealed with Parafilm and transported in plastic bags to the laboratory for extraction. In the laboratory the bottom of each collector was sealed with collector caps provided with the kit and the collector was filled with 10 ml of 1% BSA/PBS /0.5% Tween 20. The collector was sealed, shaken by hand for 2 min and allowed to sit for 5 min and a 150 µl aliquot was placed in the testing well of the RAPID testing device where it developed for 10 minutes. Group 2 mite concentrations were estimated by comparing the color intensity of a line with the color of 3 standard lines according to the following scale: 0, + (low), ++ (medium), +++ (medium-high), ++++ (high). The remaining extract was removed centrifuged for 10 minutes and stored at 4°C until assayed for Der f1, Der P1, and Der p 2 using 2-site ELISA assays. The MITEST collectors functioned well during the collection step, and facilitated the dust sampling. However during the extraction 26 of the collectors leaked at the caps. In 11 cases, the dust sample completely filled the device chamber, making extraction difficult. The test presented some difficulties in interpretation in that it was difficult to match the color of the test line with that of the standard lines on the device and that the lines were blurred in 14 tests. Despite these concerns with test interpretation, the results of the RAPID agreed with the ELISA results. For the 12 samples with a "0" value on the RAPID, Der p 2 ELISA values were all below the detection level (BD). For the 15 samples with a "low" result, ELISA values ranged from 0 to 264 ng/ml with a geometric mean of 20 ng/ml and 93% under 50 ng/ml, the given value for a low indication from the RAPID test. For RAPID values of "medium", the ELISA results ranged from BD to 651 ng/ml (geo mean 195 ng/ml), which is lower than the given value of 250 ng/ml. In the 8 samples where the RAPID test was "medium-high", the Der p 2 ELISA results ranged from 235 to 794 ng/ml (geo mean 445 ng/ml). No samples were ranked as "high" by the RAPID test. We concluded that the MITEST and the RAPID worked well in this field test and would be a useful tool for a patient to estimate mite allergen levels in their home.