



## Evaluation of materials used for bedding encasement in blocking dust mite allergen

### General Study Description:

To test the effectiveness of Mission: Allergy Mattress Covers ("Mission: Allergy Microfiber" and Mission: Allergy Barrier II") as dust mite allergen and cat allergen barriers.

### Methods (As described in Vaughan et al. J Allergy Clin Immunol 1998; 103:227-31):

- ◆ House dust with known amount of Der p1 was obtained and spiked with Der p 1 by combining 0.1g of spent *D pteronyssinus* culture with 0.9g of house dust.
- ◆ House dust with known amount of Fel d 1 was obtained from cat positive homes.
- ◆ Mission: Allergy Mattress Covers and a commercially available cotton sheet as control were cut into 7-inch squares.
- ◆ Testing involved the use of a modified dust trap that enables the aerosolized house dust to be pulled onto and through the fabric being tested.
- ◆ A 37-mm filter holder was mounted downstream of the fabric and sealed over the exit. Particles passing through the fabric were collected on a Millipore pre-filter while the vacuum pump was running.
- ◆ The filter was removed and placed into a syringe.
- ◆ 1ml of 1% BSA in PBS-Tween was added to the syringe and the samples were placed on a rocking platform overnight at 4°C.
- ◆ The extract was recovered by squeezing the syringe into a 2 ml vial and assayed by using 2-site mAb ELISA techniques according to standard IBI protocols. The eluate was assayed at dilutions of 1/2, 1/4, 1/8 and 1/16.

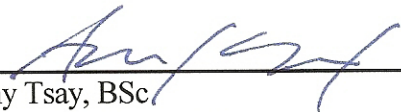
### Results:

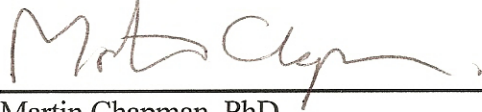
<u>Fabric Tested</u>	<u>Der p 1 recovered (ng/filter)</u>
Polycotton placebo	2720
Mission: Allergy Microfiber	<2
Mission: Allergy Barrier II	<2

<u>Fabric Tested</u>	<u>Fel d 1 recovered (ng/filter)</u>
Polycotton placebo	1447
Mission: Allergy Microfiber	<2
Mission: Allergy Barrier II	<2

Discussion:

When studied according to this protocol, each of the three Mission: Allergy encasing had less than 2ng Der p 1 and Fel d 1 (the lower limit of the assay) recovered on the filter.

  
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 Biotech R&D Specialist

  
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 Martin Chapman, PhD  
 President

8/16/2004  
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 Date

8/16/2004  
 \_\_\_\_\_  
 Date



Report of analysis

Report No. : FA-084/2549  
 Documents: all 2 pages

Sample: Mite-proof cover (Mission: Allergy Premium Microfiber)

Company: Mission Allergy, Inc.  
 PO box 45, 28 Hawleyville Road,  
 Hawleyville, CT , 06440,  
 USA

Name: Dr. Jeffrey Miller

Objectives: To test the efficacy and the physical examination of the Mite-proof cover.


Collection Date: 3 April 2006 (By post)

Analysis Date: 7-17 April 2006

Methods: 1) Heat escape method  
 2) Siriraj chamber method  
 3) Enzyme-linked Immunosorbent Assay (ELISA)  
 4) Air permeability\*  
 5) Thread count\*  
 \* Refer to Thailand Textile Institute (THTI) reports.

House dust mite spp.: *Dermatophagoides pteronyssinus* mites were separated from their culture media by mite isolator. The pure mites obtained were used in these studies.

Examiners: Assoc. Prof. Vanna Mahakittikun

Sample code	Fabric Sample
FA-084/2549	



**Analysis:**

Methods	Results
<p><b>1) Heat escape method (screening test)</b>            Briefly: To evaluate the ability of the material to block the actual mites in short term (15 mins). Adult mites were selected under a stereomicroscope by either gender of the mites for contact with outer and inner surface of the fabrics. The mites were forced to penetrate into the fabric by heat.            Interpretation: If the fabric were porous, mites would easily pass through under this stimulus.</p>	<p>Due to the small pore size of the woven fabric, mites were unable neither pass through nor penetrate into the fabric.            (No penetration)</p>
<p><b>2) Siriraj chamber method (confirmatory test)</b>            Briefly: To evaluate the ability of the material to block the actual mites in long term (7 days). Siriraj chamber is needed for restraining mites with the fabric of being studied. The mites were forced to penetrate outer and inner surfaces of the fabrics by heat. The samples were observed for seven consecutive days after the initial application.            Interpretation: Siriraj chamber method, Negative = No mite penetration and/or colonization.             Positive= A mite or more could penetrate into the fabric or forming colonization into the matrix of the fabric.</p>	<p>Both outer and inner surfaces of the fabric were <b>negative</b> results.</p>
<p><b>3) ELISA</b>            Briefly: To determine the ability of the material in blocking mite allergen. The efficacy was expressed in the percentage of protection.</p>	<p>The fabric could be prevent the leakage of mite allergen at %Protection = <b>99.9</b></p>
<p><b>4) Dust leakage</b>            Briefly: Dust were vacuumed through the 2 layers of the fabrics. The initial dust and dust retrieved were compared.</p>	<p>The fabric sample could be prevented the leakage of dust at %dust leak = <b>0.14</b></p>
<p><b>6) Air permeability*</b>            *Refer to THTI reports</p>	<p><b>2.26</b> cc/sec/cm<sup>2</sup></p>
<p><b>7) Thread count*</b>            *Refer to THTI reports</p>	<p><b>285</b> threads per sq. inch</p>
<p><b>Acceptable range for mite-proof covers:</b></p> <ul style="list-style-type: none"> <li>○ Siriraj chamber method = Negative (no mite penetration)</li> <li>○ Heat escape method = Negative (no mite penetration)</li> <li>○ %Protection ≥ 99 %</li> <li>○ % Dust leak ≤ 5%</li> <li>○ Air permeability ≤ 10 cc/sec/cm<sup>2</sup></li> <li>○ Thread count ≥ 240 (yarn no. 40x40)</li> </ul>	

We hereby certify that the information in this report is true and correct for only the samples sent to be analyzed.

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