

## **Increasing diagnostic skin testing capabilities: controlling the variables and improving the overall results**

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In the previous Articles of Interest section two articles on skin testing were published. These articles elucidated the many intricacies of skin testing including the history of skin testing in diagnosing allergies. The articles clearly address skin testing, the devices used for testing and techniques involved in diagnosing allergen skin tests.

Anyone who has determined histories of possible atopic individuals and performed subsequent skin tests based on those histories has probably been baffled by the patient who has presented with all the classic symptoms of allergic disease, only to test negative to skin testing. This certainly occurs and often leads to further testing (i.e. RAST, ID) or additional inquiry to exposure and symptom correlation.

Standardized allergen extracts have to some extent helped alleviate the false negatives involved in skin testing because of their potency. However, there are numerous allergen extracts that are not standardized and by manufacturing processes may not possess all the necessary protein or proteins needed to elicit a positive reaction in the truly atopic patient. The literature illustrates the adverse effects of phenol on proteins. An allergenic extract exposed to phenol may be less ideal than one that has not in regards to skin testing.<sup>1,2,3,4</sup>

A recent article on molds noted differences in Alt 1 and Asp 1 levels from eight manufacturers. These levels ranged from Alt 1 of 0.01ug/ml to 3.72ug/ml and Asp 1 0.01ug/ml to 61ug/ml. One has to wonder how many false negatives occurred with the weaker allergen extract if they were used for skin testing.<sup>5</sup>

An abstract published on skin testing using mite extracts at 30,000AU/ml versus 10,000AU/ml showed 51% of the patients were positive to the 30,000AU mite only and negative to the 10,000 strength.<sup>6</sup> Along these same lines a study was published showing the superior test results gained from using an AP<sup>TM</sup> dog preparation versus the traditional w/v dog allergen extract. "Total persons positive to AP<sup>TM</sup> dog extract were 59 (100%) while only 36 (61%) were positive to regular dog extract. Of the 36 who were positive to both extracts, 31 (86%) had a mean wheal size to AP<sup>TM</sup> dog that was greater than regular dog."<sup>7</sup>

Perhaps examining testing extracts for proper strength, non exposure to phenol, and adequate expiration dates, will help insure false negatives are kept to a minimum, lessen the need for intradermals, in turn providing uniform and overall more accurate test results. Ultimately, each patient's future therapy is dictated by the skin test results. The more accurate the skin test, the more on target the overall therapy.

One more caveat on skin testing. Histamine is currently available in the U.S. in two strengths 1.0mg/ml and 10mg/ml. "In the United States the usual positive control for prick-puncture testing is histamine phosphate, used at a concentration of 5.43mmol/L (or 2.7mg/ml, equivalent to 1mg/ml of histamine base). Wheal diameters with this preparation range from 2 to 7mm. However, a ten-fold greater concentration may be more appropriate, with a mean wheal size ranging between 5 and 8mm."<sup>8</sup> (Especially in children and older adults who may tend to show smaller reactions due to maturing immune systems or decreasing immune systems).

Skin testing when done correctly with validated testing devices using proper allergen strength and qualified testing personnel becomes a valuable tool in the diagnostic arsenal for atopic disease. Diligence to technique and allergen extract strength should improve skin testing and increase the accuracy of the tests.

## References

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