**Mixing Compatibility of Allergen Extracts in Immunotherapy Vaccines**

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### Materials and Methods

**Mixtures at 0-10% Glycerin**

Extract mixtures and controls containing 10% glycerin exhibited allergen compatibilities ranging from stable to highly unstable during short-term (1-3 months) storage at 2-8°C, as shown below. Grass pollen or insect extracts mixed with fungal or insect products were particularly susceptible to degradation at low (0-10%) glycerin concentrations.

**Mixtures at 25% Glycerin**

Increasing the glycerin content of extract mixtures from 6-10% to 25% produced improved recoveries of ragweed and dust mite extracts mixed with fungi, and of dust mite, dog and insect extracts mixed with insects during storage at 2-8°C, as revealed. Grass pollen mixed with fungal, insect or ragweed, and dog and insect extracts mixed with fungi were not improved significantly in 25% glycerin at 24°C.

**Mixtures at 50% Glycerin**

Mistakes at 50% glycerin exhibited further improvements in allergen stability, particularly grass pollen or insect extracts mixed with fungal or insect extracts, as illustrated below. A major allergen in one fungal extract (Mucor A 1) remained unstable after mixing with one insect extract (American cockroach) but not others (German cockroach, fly, and in 50% glycerin at 24°C).

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### Conclusions

Maintaining the consistent presence of active allergens at concentrations favorable for successful treatment outcomes is fundamental goal of allergen immunotherapy.

By incorporating knowledge of patient sensitivities and extract stability, the formulation of allergen extracts for use in immunotherapy vaccines can be optimized in a region that is best for the patient (inhaled vs. subcutaneous), and can improve patient acceptance, compliance, and efficacy of treatment.

The compatibility charts provided here can assist clinicians with formulation of immunotherapy mixes for patients presenting with a diverse range of environmental exposures and allergen sensitivities.