Isolating Exosomes in Urine and Saliva to Detect Dust and Dander Allergens in IgE Sensitized Individuals Using a Capillary Tube Precipitation Test: A New Non-Intrusive Antigen/Antibody Reaction Allergy Test

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The purpose of this research is to determine if isolating exosomes in urine and saliva can increase constancies in the capillary tube precipitation test. This, in turn, could diagnosis IgE sensitized individuals without the dangers of current invasive allergy tests. It would be an alternative for those who cannot take the current test like the elderly, young children, and at-risk people with lower immune systems. The trials involved six participants (six who provide saliva & five who provided urine) that were either allergic to both cats and dogs, one or the other, or were not allergic to either. Along with that, two cats and three dogs provided fur that was then used to extract dander from by using de-ionized water. One milliliter of the antibody (saliva or urine) was put into a test tube followed up by one milliliter of the antigen (dander). This process was used for all the trials with changing the antigen through different exosome isolation techniques. This resulted in seven trials with 195 test tubes. Further research needs to be done on commercial antigen solutions, increasing consistency, and using different exosome isolation techniques. This research and further research can accomplish the goal of creating a safer alternative for at-risk patients and provide a test that keeps the allergen away from individuals who are allergic.

Awards Won:
Air Force Research Laboratory on behalf of the United States Air Force: First Award of $750 in each Intel ISEF Category