STRONG CHILDREN'S RESEARCH CENTER

2021 Summer Research Scholar

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ABSTRACT

Title: Maternal Systemic and Mucosal IgA and IgG in Cohorts with Different Atopic Rates

Background: Rates of allergic disease including atopic dermatitis, food allergy, allergic rhinitis, and asthma have been increasing.[1] However, many studies have indicated that individuals who practice a traditional farming lifestyle have lower rates of allergy.[2] Several factors are thought to contribute to this protective effect, including enhanced microbial exposures, consumption of unpasteurized milk, and greater consumption of human milk.[2,3] Moreover, studies have shown that maternal farm exposure can confer protection to developing infants.[4] In this experiment, we measured IgA and IgG in plasma and saliva samples of mothers from the Old Order Mennonite (OOM), who live a traditional farming lifestyle with low risk of allergy and from mothers living an urban/suburban high allergy risk lifestyle in Rochester (ROC). We hypothesize that the OOM mothers will have greater levels of IgA and IgG, suggestive of a more enhanced and/or diverse exposure.

Methods: 144 plasma (80 ROC, 64 OOM) and 176 saliva (96 ROC, 80 OOM) samples were analyzed. A standard sandwich ELISA protocol was followed to determine antibody levels. Statistical analysis was performed using an unpaired non-parametric T-test with a significance level of $p < 0.05$ denoting significant differences.

Results: OOM mothers had increased total IgA and IgG compared to ROC mothers in their saliva ($p < 0.001$). No differences were found in maternal plasma for IgA and IgG. However, plasma samples contained more IgG than IgA ($p<0.0001$) while in saliva there was more IgA than IgG ($P<0.0001$).

Conclusion: Maternal saliva samples from the OOM cohort that have a low risk of allergy showed an increased level of IgG and IgA. These elevated antibody levels in the OOM cohort support our hypothesis and could be reflective of the enhanced exposures particularly at mucosal surfaces possibly due to their lifestyle. Future work will try to determine antibody levels in infant samples and which specific antigens may be inducing these responses.

References:

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