Zrinka Oreskovic et al., J Vaccines Vaccin 2017, 8:3(Suppl)
DOI: 10.4172/2157-7560-C1-057

Oil-based adjuvants and intradermal vaccine delivery: Th1 vs. Th2 response

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Intradermal immunization (i.d.) has more advantages compared to intramuscular/subcutaneous immunization as the skin is the place perfectly equipped for antigen processing and adjuvants used can influence quantity and quality of induced immune response. However, it is still seldom used method of vaccine delivery. To determine the effect of i.d. application of different adjuvants on porcine immune response, two in *vivo* experiments were performed. Firstly, animals were immunized with model antigen KLH only or KLH combined with different adjuvants: complete or incomplete Freund´s adjuvants, Montanide ISA, Emulsigen and Al(OH)3. Blood samples were taken before immunization, three weeks after immunization and two weeks after re-immunization. Levels IgG1 and IgG2 antibodies in sera were determined by ELISA. Oil-based adjuvants, except of Emulsigen, induced high IgG2 primary response (Figure 1) suggesting high Th1 cell polarization. Secondly, local cytokine and chemokine response after i.d. was tested. Animals were immunized with the same antigen- adjuvant combination. Skin biopsies were taken 4 and 24 hours post-immunization for histopathological analyses and quantitative RT-PCR. As expected, high pro-inflammatory response was clear and strong in the site of application and it correlated to local reaction of the skin and high cell infiltration into the site of application. Also, chemokine and cytokine expression suggest clear differential Th1 and Th2 polarization induced by different adjuvants. Based on these studies, we can conclude i.d. application can elicit good and rapid immune response and should be considered as a good vaccine delivery route.

Biography

Zrinka Oreskovic has done her education from Osijek, Croatia. She has interest in immunology. Now, as a Scientist, she is aiming her research on intradermal vaccine delivery, dendritic cells and Th1/Th2 paradigm. She uses different combinations of methods in her research and develops new approaches for future research. Currently, she is working on oil-based adjuvants and their influence on dendritic cell activation, antigen presentation and Th1 and Th2 response.

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