Yusuf Omosun et al., J Vaccines Vaccin 2017, 8:1(Suppl)
http://dx.doi.org/10.4172/2157-7560.C1.054

VCG modulate innate and adaptive immunity to vaccine antigens

Yusuf Omosun[1], **Q He**[1], **J U Igietseme**[1], [2] and **F O Eko**[1]
[1]Morehouse School of Medicine, USA
[2]Centers for Disease Control and Prevention, USA

Statement of the Problem: Vaccination strategies utilizing subunit antigens often rely on the incorporation of effective adjuvants to modulate immune responses. *Vibrio cholerae* ghosts (VCGs; genetically derived empty *V. cholerae* cell envelopes) constitute an effective delivery system that promotes the induction of protective immunity in the absence of external adjuvants. However, the mechanism by which VCGs enhance immunity has not been elucidated. We hypothesized that the immunostimulatory ability of VCGs involves dendritic cell (DC) activation and function.

Aim: Aim of this study is to evaluate the immunomodulatory effect of VCGs on induction of innate and adaptive immune responses.

Methodology & Theoretical Orientation: Mouse bone marrow-derived DCs (BMDCs) co-cultured with VCG or UV-irradiated Chlamydia elementary bodies (UV-EBs) were stained with monoclonal antibodies against co-stimulatory molecules and surface expression was analyzed by flow cytometry. The magnitude of cytokines secreted by culture supernatants or splenocyte-stimulated cultures was analyzed by cytokine ELISA. Furthermore, the ability of VCG-pulsed DCs to present chlamydial antigen to infection-sensitized CD4+ T cells and enhance the protective immunity of chlamydial antigens was also evaluated.

Results: VCG-pulsed DCs showed increased secretion of proinflammatory cytokines and expression of co-stimulatory molecules associated with DC maturation in response to stimulation with UV-EB. Also, co-culture of VCG with DCs resulted in effective chlamydial antigen presentation and enhancement of protective immunity.

Conclusion & Significance: These results demonstrate that VCGs activate the maturation of DCs leading to enhancement of innate and adaptive immunity to a co-delivered antigen. The results highlight the potential of the VCG as immunomodulators for enhancement of protective immunity against microbial infections.

Biography

Yusuf Omosun is involved in research aimed at understanding how Chlamydia infection increases the risk of developing tubal factor infertility (TFI), and finding ways to ameliorate this process through more efficient diagnosis or the discovery of viable vaccines. This would have a tremendous impact in women's reproductive health by reducing the detrimental pathology of *Chlamydia*.

yomosun@msm.edu

Notes: