Silvia Vendetti, J Vaccines Vaccin 2011, 2:5
doi: http://dx.doi.org/10.4172/2157-7560.S1.03

International Conference & Exhibition on
Vaccines & Vaccination

22-24 Nov 2011 Philadelphia Airport Marriott, USA

Polyclonal tregs enhance vaccine-induced immune responses by modulating the trafficking of antigen-specific T cells

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The efficacy of vaccines can be greatly improved by adjuvants that enhance and modify the magnitude and the duration of the immune response. Several approaches to design rational adjuvants are based on suppression of regulatory T cells (Treg) function. Here, we evaluated whether the addition of polyclonal or antigen-specific Treg at the time of vaccination with tetanus toxoid and the mucosal adjuvant cholera toxin (CT) would affect immune responses transfer of polyclonal, but not antigen–specific, CD4+CD25+ Treg to normal mice enhanced CT-induced antibody responses after mucosal immunization. Furthermore, recipients of polyclonal Treg that had been immunized with antigen in the presence of CT had an increased number of antigen-specific CD4+ T cells with an activated phenotype (CD44hi) in the draining lymph nodes. This accumulation of antigen-specific CD4+ T lymphocytes potentially favour germinal centre formation and promote T-dependent B cell responses allowing immunity to develop in lymphoid organs.

Overall, our study indicates that Foxp3+ Treg can not only act as suppressor cells, but also as helper T cells depending on the type of the immune response being evaluated and the microenvironment in which the response is generated.

Biography

Silvia Vendetti has completed her thesis from University "La Sapienza" Rome, Italy, her Ph.D in Immunopharmacology and postdoctoral studies from University of Palermo, Italy and Imperial College School of Medicine, UK. She is senior research scientist at Department of Infectious, Parasitic and Immune-mediated Diseases, Istituto Superiore di Sanità, Rome, Italy. She has published more than 40 papers in reputed international peer reviewed journals.