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A new recombinant BCG vaccine induces specific Th17 and Th1 effector cells with higher protective efficacy against tuberculosis

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Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis (Mtb) that is a major public health problem. The vaccine used in TB prevention is the Mycobacterium bovis- BCG that presents a variable efficacy in protecting against pulmonary TB. Thus, the development of new vaccines with superior BCG protection efficacy has been the target of several studies. Here we constructed a new recombinant BCG vaccine expressing a fusion protein composed of immune epitopes from Ag85C, MPT51 and HspX (CMX) and evaluated its immunogenicity and protection in a murine model of infection. The stability of the vaccine in vivo was maintained up to 20 days post vaccination. rBCG-CMX is highly phagocytized by peritoneal macrophages and induces NO production. After mouse vaccination, this vaccine induced specific immune response to the fusion protein in cells from lungs and spleens. Vaccinated mice presented higher amounts of Th1, Th17, and polyfunctional specific Th cells. The vaccine reduced almost half a log of the lung bacterial load when compared to BCG vaccinated animals. This study shows a new promising vaccine for tuberculosis posing a candidate for clinical trials.

Biography

Ana Paula Junqueira-Kipnis has completed her PhD at the age of 30 years from Universidade de São Paulo and Postdoctoral studies from Colorado State University, Fort Collins, CO and Albert Einstein College of Medicine, New York, NY. She is the Head of Immunopathology Laboratories for infectious Diseases at Federal University of Goias, Brazil. She has received a prize for innovation in public health by Sanofis Laboratory in 2012 for designing a new vaccine for TB. She has published more than 40 papers in reputed journals and serving as a reviewer board member of several reputed journals.

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