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Immunogenicity and protective efficacy of oral heat-killed multi-serotype *Shigella* (HKMS) vaccine in rabbit model

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Bacillary dysentery caused by *Shigella* species, is a major cause of infant morbidity and mortality in developed as well as in developing countries. Now-a-days, we are approaching towards untreatable Shigellosis due to the global emergence of multidrug resistance which is increasing the importance of an anti-dysentery vaccine. Till date no suitable *Shigella* vaccine is available for public health use. The immune responses against *Shigella* species are serotype-specific and there are different serotypes of Shigella species which demands an immunization strategy that will include multiple vaccine strains to provide protection against multiple serotypes. In our study, we evaluated the protective efficacy and immune response of heat-killed cocktail form (HKMS) of six *Shigella* strains (*S. dysenteriae 1, S. flexneri 2a, S. flexneri 3a, S. flexneri 6, S. boydii and S. sonnei*) in rabbit model. Rabbits were immunized with 10^7 heat-killed *Shigella* strains four times with one week interval on 0, 7^{th}, 14^{th} & 21^{st} day and were challenged on the 28^{th} day with 10^9 organisms of wild type virulent *Shigella* strains. Immunized rabbits did not develop shigellosis compare to the non-immunized rabbits. Serum IgG and IgA titers showed exponential rise during oral immunization. Antibody in Lymphocyte Supernatant (ALS) assay, Cytokine assay and Immunoblotting against both whole cell lysates and lypopolysaccharide have demonstrated a strong protective immune response following the oral immunization of HKMS; thus justifying the potential of HKMS to become a "non-living" vaccine candidate against shigellosis in our future.

Biography

Dhrubajyoti Nag has completed his graduation in Microbiology from University of Calcutta in 2009 and completed his post graduation in Biotechnology from Jadavpur University in 2011. Now he is doing his Ph.D. under the guidance of Dr. Hemanta Koley, Scientist C, National Institute of Cholera and Enteric Diseases, India, under a project of Okayama University, Japan, entitled Development and evaluation of a heat killed multi-serotype oral *Shigella* vaccine.

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