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# Immunogenicity and protective efficacy of oral multi-serotype OMVs *Shigella* vaccine

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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. At present, only antibiotic therapy is available for treatment of shigellosis. Unfortunately, due to the global emergence of multidrug resistance, the choice of antimicrobial agents for treating shigellosis is very limited and we are approaching where the shigellosis can become an untreatable disease because of lake of an effective antibiotic. Therefore, the possibilities of other preventive measures such as anti-dysentery vaccines have attracted increasing attention in this field. Various trials of several candidates' vaccine are being done in different parts of the world, but till date no suitable *Shigella* vaccine is available for public health use. There are different serotypes of *Shigella* species and their distribution varies between endemic geographical regions. The immune response against *Shigella* species are serotype-specific, so current immunization strategies have required the administration of multiple vaccine strains to provide protection against multiple serotypes. In our study, we evaluated the protective efficacy and immune response of cocktailed outer membrane vesicles of multiple serotypes of six *Shigella* strains (*S. dysenteriae* 1, *S. flexneri* 2a, *S. flexneri* 3a, *S. flexneri* 6, *and S. sonnei*) in mice model and guineapig model. The protective efficacy after oral immunization with *four doses (0, 14$^{th}$ & 28$^{th}$ and 35$^{th}$ Day) of 50 ug OMVs of Shigella* strain was examined. *T*he protection following challenge was 100% protection in the immunized group where as the unimmunized group of animals developed dysentery. Serum IgG and IgA titers showed exponential rise during oral immunization. Histology of the colonic biopsy samples, immunoblot assays against whole cell lysate, lypopolysaccharide and outer membrane protein strongly supported the mounting of a vigourous immunune response following oral immunization. Multi-serotype OMVs *Shigella* cocktail antigens could be a promising vaccine candidate for shigellosis in the future.

## Biography

Dr. Hemanta Koley, MS, Ph.D, Scientist C, Division of Bacteriology, After completion of his Master degree in Physiology from University College of Science & Technology, Calcutta University, he joined in National institute of Cholera and Enteric Diseases, Beliaghata, Calcutta for his Ph. D. In 1996, he joined as Associate Professor in Dept. Physiology, College of Medical Sciences-Nepal, where he devoted entire heartily in teaching medical students till 2001. In the mean time Dr. Koley got opportunity for Post Doctoral research at Dept of Physiology, Rutgers-The State University of New Jersey, New Brunswick, USA. After completion of one year in Rutgers University, Dr. Koley moved to Boston, joined in Gastroenterology Section, Harvard Medical School as Research Associate. His present research interest is to understand signal transduction pathways in immune and inflammatory cells during diarrhoea and also to study the nature of protection against diarrhoeal pathogens like Vibrio cholerae and Shigella in different animal model. He has published 18 original papers and 12 abstracts in his credit. He has secured patent for a process for the preparation of Cholera Vaccine-VA1.3 (European Patent Office; Patent No.- 97309957.5-2105 on 19/05/98). Dr. Koley received Young Scientist Award in IUPS, August 26-31, 2001