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Immunogenicity and protective efficacy of multi-serotype outer membrane vesicles of *shigellae* in animal model

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Immunization of adult female mice with outer membrane vesicles (OMVs) of *Shigella boydii* type 4 protected their offspring passively from shigellosis. Now, we have advanced our research by formulating multi-serotype outer membrane vesicles (MOMVs) mixing the OMVs of *S. dysenteriae 1*, *S. flexneri 2a*, *S. flexneri 3a*, *S. flexneri 6*, *S. boydii* type 4 and *S. sonnei* to achieve a broad spectrum protection against shigellosis. Adult mice were immunized orally with 50µg of MOMVs, four times at weekly intervals. Immunological parameters were observed at various time points, before, during and after immunization, in adult mice. Passive protection was examined in their offspring by measuring protective efficacy and studying intestinal colonization, after challenging with various *Shigella* strains. Immunized dams exhibited a consistent broad spectrum antibody response. Three to four day-old offspring of immunized dams showed significant long term passive protection against *Shigella flexneri* 2a, 3a, 6, *S. boydii* type 2 and *S. dysenteriae* 1 challenge. Their stomach extracts, containing mainly milk from the dams, have also exhibited significant levels of anti-MOMVs immunoglobulins. In conclusion, MOMVs formulation represents an easy, safe immunization strategy that was found suitable to provide complete passive protection to the neonatal mice against all four serogroups of *Shigellae*. This formulation could be exploited for the development of a novel non-living vaccine against human shigellosis in our near future.

Biography

Hemanta Koley, after completion of his master's degree in Human Physiology from Calcutta University, he joined in NICED, Beliaghata, Calcutta, India, for his Ph.D. work. In 1996, he worked as Associate Professor in College of Medical Sciences, Nepal, where he devoted entire heartily in teaching medical students till 2001. He moved to Rutgers-The State University of New Jersey, New Brunswick, USA for postdoctoral research. He also worked 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 cholera*, *Salmonella* and *Shigella* in different animal models. He has published 43 original papers and 50 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.

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