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Recombinant heat shock protein 60 (GroEL) of *S. Typhi* as an effective adjuvant in modulating the immunogenicity of Invasion plasmid antigen B (IpaB) of *Shigella flexneri* against lethal *Shigella* infection in mice

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Shigella spp. cause severe bacillary dysentry in humans associated with high morbidity and mortality. The multiple *Shigella* serotypes and their resistance to antibiotics warrants the development of vaccine that is protective across all serotypes. *Shigella* utilizes type III secretion apparatus and translocates the effector proteins into the host cell to initiate the infection. The effector protein IpaB (Invasion plasmid antigen B) is necessary for pathogenesis and mediates macrophage cell death. It is the conserved molecule in all *Shigella* serotypes. The present study evaluates the adjuvant effect of recombinant GroEL of S. Typhi when co-immunized with recombinant IpaB of *S. flexneri* in mice. IpaB domain region (37 KDa) of *S. flexneri* was amplified, cloned, expressed in BL-21 *E.coli* cells and purified. Intra-nasal (i.n.) immunization of mice with IpaB protein alone showed increase in IgG and IgA antibody titers as compared to control mice, but when co-immunized with GroEL, there was two fold increase in antibody titers. Antibody isotyping (IgG1, IgG2a) and cytokines estimation (IFN-γ, IL-4, IL-10) revealed enhanced Th1 and Th2 immune responses in co-immunized group. Immunization of mice with recombinant IpaB protected 60-70% of mice from lethal i.n. infection of *S. flexneri, S. boydii* and *S. sonnei* whereas co-immunization increased the protective efficacy to 80%. This study shows the potential of GroEL of S. Typhi as an effective adjuvant for the development of broadly protective IpaB based vaccine against all *Shigella* spp.

Biography

STS. Chitradevi has completed her M.Sc Microbiology at Annamalai University, Chidambaram, India. She is the Senior research scholar at Defence Institute of Physiology and Allied Sciences (DIPAS), Defence Research and Development Organization (DRDO), Delhi, India and pursuing her Ph.D in Life Sciences at Bharathiar University, Coimbatore, India. She was awarded with Tamil Nadu State Council for Science and Technology fellowship, DRDO- Junior research fellowship and DRDO-Senior research fellowship. She recently published her work in the reputed journal Vaccine.

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