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Development of oral mucosal vaccine against multidrug resistance *Shigella dysenteriae* type-1 (SD1)

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Abstract

Shigellosis is an acute invasive disease of the lower intestine which afflicts millions of people worldwide with an estimated one million fatalities per annum. Among the 50 serotypes and subtypes of *Shigella*, SD1 is the most virulent type and responsible for epidemics and pandemics. In the last decade, antibiotic resistant SD1 strains have been isolated with increasing frequency in Africa and Asia which reduce the option of effective oral therapy. The magnitude of the public health threat, development of vaccine against *Shigella* is considered a public health priority. There is no approved *Shigella* vaccine in the market though attempts have been made to develop an effective vaccine against shigellosis using killed, attenuated and subunit vaccine approach. The purpose of the study is to develop an oral vaccine against SD1 using genetically engineered *Lactocoocus lactis* expressing SD1 antigens to provide mucosal immunity. *L. lactis*, being pro-biotic bacteria has been the cynosure of novel vaccine-development platform because of its safety, stability in the stomach, and immunomodulatory properties. In this study, using bioinformatic tools and available literatures, we identified genes *OmpA, OspC2 and StxB* as a probable vaccine candidates. *OmpA and OspC2* were successfully cloned in to *L. lactis* expression vectors and their presences were confirmed by PCR and RE digestion tests. After confirmation, *L. lactis* NZ9000 was successfully transformed with the constructed vectors pSEC:OmpA and pSEC:OspC2. Expressed antigens were confirmed by gene specific PCR and Western blotting. The efficacy of these expressed antigens to generate the serum and mucosal specific antibodies in the experimental animals is underway.

Biography

Priti Desai has completed her Ph.D at the age of 30 years from Bhavnagar University and postdoctoral studies from NIPER-Ahmadabad. She is the Scientist-B in a premier Pharmaceutical Science organization. She has awarded DBT scholarship for post-doctoral studies in NIPER-Ahmadabad. She has independant project on vaccine development against shigellosis which is funded by central government agencies (ICMR). She has a publication in peer reviewed journal like Biotechnology Advances**.**