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**Construction and Immunogenicity Analysis of Nanoparticulated conjugate of
Heat-Stable Enterotoxin (STa) of Enterotoxigenic Escherichia coli**

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Abstract

The ultimate goal of this research was to overcome the low immunogenicity of the biological macromolecule (heat stable enterotoxin STa) *via* its conjugation to biodegradable PLGA nanoparticles (NP). STa was first isolated from Enterotoxigenic Escherichia coli (ETEC), purified and identified using reported HPLC procedures. Optimized homogenous PLGA NP, prepared using the nanoprecipitation technique were used for conjugating STa using the carbodiimide synthesis. Covalent binding of STa to PLGA NP was confirmed *via* FTIR and ¹HNMR analysis. Safety and tolerability of the developed nanoparticulated STa-PLGA conjugate were confirmed by MTT assay on A549 lung cancer cells. After subcutaneous immunization, STA-PLGA NP conjugate induced a significant immune response in mice showing a strong binding and neutralizing antibody titer. The developed novel STa-PLGA NP conjugate is expected to provide promising protection against enterotoxigenic Escherichia coli (ETEC).

Keywords: STa; PLGA nanoparticles; immunization

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