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Structural and functional characterization of various forms of glycated heat labile toxin protein

Premkumar Dinadayala, Patrick Bonifassi, Elise Decastro and David Poncet
Sanofi Pasteur, France

Enterotoxigenic *Escherichia coli* (ETEC) are responsible for a high diarrheal disease burden, especially in children living in endemic countries and travelers visiting those countries. After oro-fecal transmission, ETEC reaches the small intestine where adhesion occurs through colonization factors. Then heat Labile Toxin (LT), one of the two enterotoxins produced by ETEC, is secreted and causes aqueous diarrhea. LT consists of five B sub-units, which are able to bind the monosialoganglioside GM1 and a single, catalytically-active A subunit stimulating the intracellular synthesis of cyclic Adenosine Monophosphate (cAMP), leading ultimately to fluid and electrolyte secretions into the intestinal lumen. Herein we characterized various purified forms of LT: (1) recombinant B subunit of LT (rLTB) (2) native LT purified from ETEC strain (nLT) and (3) recombinant LT purified from *E. coli* expressing the protein (rLT). SDS-PAGE analysis showed a difference of migration between the different LT forms confirmed by liquid chromatography coupled to MS (mass shift of 162 Da). This modification was found to be due to the glycation of LT subunits by galactose, a reducing sugar that is used in the LT purification process and remains present during the LT Lyophilization process. This observation has to be taken into account for the purification and storage of LT. Experiments are ongoing to determine if LT glycation could have an impact on the functional activity of LT using an in vitro assay based on cAMP release by epithelial cell line.

Biography

Premkumar Dinadayala has completed his PhD from University of Toulouse and Postdoctoral studies from Colorado State University, Colorado. He is working as a Scientist since 12 years at Sanofi Pasteur. He has published more than 10 papers in journals.

Premkumar.Dinadayala@sanofi.com

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