Title:	Pre-pore oligomer formation by Vibrio cholerae cytolysin: Insights from a truncated variant lacking the pore-forming pre-stem loop
Authors:	Paul, Karan (/jspui/browse?type=author&value=Paul%2C+Karan) Chattopadhyay, K. (/jspui/browse?type=author&value=Chattopadhyay%2C+K.)
Keywords:	Vibrio cholerae cytolysin Pore-forming toxin fluorescence resonance energy transfer Circular dichroism
Issue Date:	2014
Publisher:	Elsevier
Citation:	Biochemical and Biophysical Research Communications, 443(1), pp.189-193.
Abstract:	Vibrio cholerae cytolysin (VCC), a β-barrel pore-forming toxin (β-PFT), induces killing of the target eukaryotic cells by forming heptameric transmembrane β-barrel pores. Consistent with the β-PFT mode of action, binding of the VCC toxin monomers with the target cell membrane triggers formation of pre-pore oligomeric intermediates, followed by membrane insertion of the β-strands contributed by the pre-stem motif within the central cytolysin domain of each protomer. It has been shown previously that blocking of membrane insertion of the VCC pre-stem motif arrests conversion of the pre-pore state to the functional transmembrane pore. Consistent with the generalized β-PFT mechanism, it therefore appears that the VCC pre-stem motif plays a critical role toward forming the structural scaffold of the transmembrane β-barrel pore. It is, however, still not known whether the pre-stem motif plays any role in the membrane interaction process, and subsequent pre-pore structure formation by VCC. In this direction, we have constructed a recombinant variant of VCC deleting the pre-stem region, and have characterized the effect(s) of physical absence of the pre-stem motif on the distinct steps of the membrane pore-formation process. Our results show that the deletion of the pre-stem segment does not affect membrane binding and pre-pore oligomer formation by the toxin, but it critically abrogates the functional pore-forming activity of VCC. Present study extends our insights regarding the structure–function mechanism associated with the membrane pore formation by VCC, in the context of the β-PFT mode of action.
URI:	https://www.sciencedirect.com/science/article/pii/S0006291X13019797?via%3Dihub (https://www.sciencedirect.com/science/article/pii/S0006291X13019797?via%3Dihub) http://hdl.handle.net/123456789/3042 (http://hdl.handle.net/123456789/3042)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
need to add pdf....odt (/jspui/bitstream/123456789/3042/1/need%20to%20add%20pdf....odt)		8.12 kB	OpenDocument Text	View/Open (/jspui/bitstream/1234

Show full item record (/jspui/handle/123456789/3042?mode=full)

(/jspui/handle/123456789/3042/statistics)