



Category: Miscellaneous

Counter the Presence of Endotoxin- Reviewing Molecular and Downstream Approach

Pragya Prakash, Hare Ram Singh and Santosh Kumar Jha

Department of Bio-Engineering, Birla Institute of Technology, Mesra, Ranchi, INDIA

Presenting author: pragyaparakash.2009@rediffmail.com

Abstract

Endotoxins are major components of the outer membrane of gram negative bacteria. Endotoxin mainly includes lipopolysaccharides (LPS) which consist of O-antigen region, a core oligosaccharide and lipid A. LPS causes various side effects such as septic shock, hyperthermia, hepatic shock, etc. Exposure to endotoxin causes histological variations in inflammatory cells. Research at molecular level has revealed that ATPase activity is inhibited by endotoxin. LPS plays a crucial role in inhibition of mitochondrial functions and cellular transport system. Various attempts are being made for the treatment of deteriorating effects of endotoxins on immune system. These include use of anti-endotoxin antibodies and receptor molecules to block the endotoxin receptors. This work discusses over the aspects of removal of endotoxin by the ways of development of purification techniques and also highlights the research conducted to alter the release and/or affect the structure of endotoxin which may lead to reducing the ill-effects. Taking the molecular approach the effect of endotoxin could be reduced thereby inducing the reaction between small subunits of endotoxin and LPS inhibitors preventing the formation of large stable complexes thereby reducing its effect. Downstream approach is followed in order to remove the endotoxins as contaminant in the biological preparations. This can be achieved by improving the separation system of the biological molecules. Use of active biomolecules in place of synthetic chemicals may prove effective. This paper discusses the molecular and processing aspects to counter endotoxin.

Citation: Prakash, P., Singh, H.R. and Jha, S.K. Counter the Presence of Endotoxin- Reviewing Molecular and Downstream Approach [Abstract]. In: Abstracts of the NGBT conference; Oct 02-04, 2017; Bhubaneswar, Odisha, India: Can J biotech, Volume 1, Special Issue, Page 137. <https://doi.org/10.24870/cjb.2017-a123>