Adv. Pharmacol. Toxicol. Vol. 12 (3) 2011, 69-72
ISSN - 0973-2381

SCREENING OF BACTERIAL EXOTOXINS FOR THEIR PHARMACOLOGICAL ACTIVITY *IN VITRO*

S.K. Aminabee[1*], M.C. Prabhakara[2], K. Vinod Kumar[1] and A. Lakshmana Rao[1]
[1]V.V. Institute of Pharmaceutical Sciences, **GUDLAVALLERU**- 521 356, A.P.
[2]Shri Vishnu College of Pharmacy, **BHIMAVARAM**- 534 202, A.P.

In microbiological and clinical studies, purified staphylococcal -toxin provokes coronary vasoconstriction and loss in myocardial contractility. Bacterial exotoxins, such as staphylococcal -toxin, implicated in the loss of cardiac performance encountered in Gram-positive septic shock. Exposure of rat aortic rings to purified *Escherichia coli* lipopolysaccharide (endotoxin) *in vitro* inhibited subsequent contractions caused by vasoconstrictors. In the present study we have examined the effects of bacterial exotoxins like Staphylococcus aureus exotoxins, E.coli exotoxins, Bacillus subtilis exotoxin *in vitro*. For this purpose we have choosen frog as an experimental animal and the tissue was frog isolated heart. In the initial days there was no change in HR, CO and force of contraction with sample when compared with control. But on the later days the initial decrease (negative inotropic) and later increase (positive inotropic) in force of contraction was more with sample compared to control. Muscarinic blocker like Atropine (ATP) and non-selective blocker like Timolol did not block these effects indicating that these actions are not mediated through either muscarinic or $ß_1$-receptors respectively.

INTRODUCTION

An exotoxin is a special type of molecule that is secreted by a microorganism. Although the blame is usually put on bacteria, exotoxins are also found to be produced by fungi, algae, and other organisms. As the name suggests, these molecules are toxins and cause damage to our body's cells. The way they inflict their damage varies depending on the type of toxin, but most exert their power by interfering with the normal metabolism of the cell are entirely destroying the cell.

***Staphylococcus aureus* -toxin**, also known as -hemolysin (Hla), is the major cytotoxic agent released by bacterium *Staphylococcus aureus* and the first identified member of the pore forming beta-barrel toxin family (Bhakdi and Tranum-Jensen, 1991). -toxin has been shown to play a role in pathogenesis of disease, as *Hla* knockout strains show reductions in invasiveness and virulence (Bubeck Wardenburg and Schneewind, 2008). Interestingly, the dosage of toxin can result in two different modes of activity. Low concentrations of toxin bind to specific, but unidentified, cell surface receptors and form the heptameric pores. This pore allows the exchange of monovalent ions, resulting in DNA fragmentation and eventually apoptosis (Bantel *et al., 2001).* Higher concentrations result in

* Corresponding Author