Gaurav Baranwal et al., J Biotechnol Biomater 2015, 5:6
http://dx.doi.org/10.4172/2155-952X.C1.043

OMICS International
conferenceseries.com

6th World Congress on
Biotechnology
October 05-07, 2015 New Delhi, India

O-acetylation of peptidoglycan affects ex vivo and in vivo survival of *S. aureus*

Gaurav Baranwal and **Lalitha Biswas**
Amrita Vishwa Vidyapeetham University, India

Lysozyme is one of the principle components of the host innate defense system which cleaves the β-1, 4 glycosidic bonds between N-acetylmuramic acid (NAM) and N-acetylglucosamine (NAG) of the peptidoglycan to induce bacterial lysis. It is present in a very high concentration in all human biological fluids such as saliva, nasal secretions, serum and tears and produced by neutrophils, macrophages and dendritic cells during phagocytic killing of bacterial pathogen as a part of host innate immune defense mechanism. *Staphylococcus aureus* (*S. aureus*), an opportunistic pathogen acetylates its peptidoglycan at the C-6 position of NAM producing the 2, 6-N, O-diacetylmuramic acid derivative to resist the catalytic activity of lysozyme. Earlier studies showed that under *in vitro* conditions *S. aureus* mutant with de-O-acetylated peptidoglycan (ΔoatA) was 2-3 fold more sensitive towards lysozyme than the parental strain. In the present study, we are reporting the role of peptidoglycan O-acetylation in *S. aureus* virulence in *ex vivo* and *in vivo* experiments. Our preliminary results showed the diminished survival of the mutant devoid of O-acetylation in phosphate buffer solution containing human lysozyme. The survivability of the ΔoatA mutant was also challenged when exposed to human biological fluid like tears, blood, sweat and saliva. Further the survivability inside macrophages as well as under *in vivo* scenario of the ΔoatA mutant when compared with wild type strain of *S. aureus* was found diminished. With the above found results we assume OatA could act as a potential target for future drug development.

Biography

Gaurav Baranwal is currently pursuing his PhD from Center for Nanosciences and Molecular Medicines, Amrita University, Kerala. He has published two research articles in peered review journals and he has participated in many conferences for oral and presentations.

lalithabiswas@aims.amrita.edu

Notes: