

9th World Congress and Expo on

IMMUNOLOGY, IMMUNITY INFLAMMATION & IMMUNOTHERAPIES

November 02-03, 2017 | Atlanta, USA

Formulation and evaluation of novel particulate vaccine against gonorrhea

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Gonorrhea is one of the most common sexually transmitted infections caused by Gram-negative Diplococcus bacteria, *Neisseria gonorrhoea*. In 2009 301,174 cases of gonorrhea were reported in the US which accounts for 99.1 cases per 100,000 people. Patients suffer from symptomatic urethritis and cervicitis, pelvic inflammation, pus discharge, abdominal pain and dyspareunia. The treatment for gonorrhea involves use of antimicrobials but development of drug resistance is a great threat to public health and therefore novel methods for prevention of gonorrhea infection are needed. In the present study, we formulated microneedles to deliver and evaluate efficacy of dead gonorrhea bacteria in microparticles as vaccine through transdermal route. *N. gonorrhoeae* were grown in GC Broth. Bacteria were then harvested by centrifugation and three washings were done using PBS solution followed by centrifugation to concentrate bacterial suspension. This concentrated bacterial suspension was used to prepare vaccine microparticles using pre-crosslinked BSA. To this solution, concentrated bacterial suspension was added and microparticles were prepared by spray drying using a 0.5 mm nozzle at 120°C, 100% aspirator and 20 ml/h speed. The microparticles obtained were characterized. The percent yield for vaccine particles was 89% w/w. The size of the particles was determined by using Malvern Zetasizer, vaccine particles were 4.5 um in size and poly dispersity index (PDI) was 0.447. The charge on the particles was -25.1 ± 5.79 mV. Vaccine particles were successfully prepared and characterized for yield, size, PDI and charge. Future studies will involve evaluation of this particulate vaccine for inducing an immune response in *in-vitro* and *in-vivo* studies.

Biography

Lotika Bajaj is a PhD student in the Department of Pharmaceutical Sciences, Mercer University, Atlanta. She completed her Masters of Pharmacy from Punjabi University, India. As a graduate Student in the Vaccine Nanotechnology Laboratory at Mercer University, her area of research is particulate vaccines against infectious diseases.

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