


The present study was undertaken to evaluate bovine mastitis causing *S. aureus* BF based vaccine in pregnant rabbits. The ‘*bap*’ specific PCR analysis of 25 bovine mastitis *S. aureus* isolates indicated 40 per cent of isolates were ‘*bap*’ positive. Analysis of protein profiles of BF and FC of *S. aureus* SA16 and SA2 indicated that the protein profiles of BF had differed from FC by 56 per cent with expression of unique proteins. Western blot analysis revealed six and three immunogenic proteins respectively in *S. aureus* SA16 and *S. aureus* SA2 BF upon probing with *S. aureus* SA16 BF HIS indicating the immunogenicity and cross-reactivity of novel proteins expressed when grown under BF mode. These proteins were not detected when probed by FC HIS. Mastitis was induced in lactating rabbits by inoculating $10^4$, $10^5$, $10^6$ and $10^7$ cfu/ml of bacterial suspension at the base of the teat which was indicated by gross lesions of mammary glands, increased SCC and CMT positivity. All these relevant indicators of mastitis showed maximum values at 48 hrs post inoculation. These results showed that both the strains had induced mastitis in rabbits and that $10^4$ cfu/ml of bacterial suspension could be used for challenging. Pregnant rabbits immunized with *S. aureus* SA16 BF and FC vaccines were evaluated for the gross lesions of mammary glands, SCC, CMT and serum IgG level by ELISA after challenge with homologous and heterologous strains. Statistical analysis was made to evaluate BF and FC vaccines with respect to development of mastitis indicated that the mean percentage of mammary glands showing lesions at 48 hrs after challenging and mean SCC and percentage of CMT positive mammary glands after challenge was less in BF vaccinated compared to FC vaccinated rabbits. Further, serum IgG level detected by ELISA was significantly higher in BF vaccinated than FC vaccinated rabbits. Higher cross protection conferred by BF vaccine was noticed based on challenge studies. Vaccination trials in rabbits with *S. aureus* BF and FC vaccines indicated the superiority of *S. aureus* BF vaccine to the FC vaccine.