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An anti-*C. difficile* PSII polysaccharide-KLH conjugate vaccine is efficacious in mice

Clostridium difficile infections in humans are a leading cause of diarrheal-related ailments that can lead to death, and thus a vaccine would be welcomed, especially one that would control the carrier state. We have explored the polysaccharides of *C. difficile* and have discovered that the vegetative cells of this pathogen expose several specific cell-wall polysaccharides, named PSI, PSII and PSIII. Polysaccharide PSII has been determined to be a conserved cell-surface antigen expressed on both spores and vegetative cells across many strains of *C. difficile*. We have observed that natural anti-PSII antibodies are present in farm animals, and that vaccine induced PSII antisera recognize the surface of *C. difficile* cells. In our presentation, we will describe the design of a PSII-suKLH conjugate *C. difficile* vaccine and its evaluation in a murine model of infection. Briefly, vaccination of C57BL/6 WT mice with a PSII-KLH conjugate vaccine protected 92% of mice from a primary infection with an LD_{50} dose (40% of unvaccinated mice survived). In a secondary challenge, with a 10 fold higher spore count, all vaccinated animals survived (50% of unvaccinated mice died). These data suggest that a PSII vaccine adjuvanted with suKLH is effective in stimulating protective mucosal humoral responses against primary and recurring *C. difficile* infection.