InvenioIP - Technology Details

Institution: University of Maryland, Baltimore

Docket: FN-98-001

Title: Attenuated Strains of Salmonella Typhi as Mucosal Live Typhoid Vaccines and Expression Vectors

Summary: Salmonella enterica serovar Typhi is the cause of typhoid fever, which remains an important public health problem in many parts of the world. Attenuated strains of S. Typhi were engineered by researchers at UMB's Center for Vaccine Development, and selected strains have proven safe and immunogenic in Phase 1 and Phase 2 human trials. The same strains have proven to be excellent live vectors for the expression of foreign antigens, making these strains very versatile for vaccine development.

Applications:
- Active immunization against typhoid fever in high risk populations.
- Also proven as an oral delivery system as basis for vaccines against multiple types of pathogens.

Advantages:
- More convenient (i.e. one-dose, oral) vaccine against typhoid fever than currently available commercial vaccines.
- A need remains for improved typhoid fever vaccines, as the currently available commercial vaccines are only moderately effective (50% to 70%).

State of Development: The vaccine strain CVD 909 is in Phase 2 clinical development, having completed a second Phase 1 trial in a prime-boost regimen with the live strain CVD 909 as an oral prime followed by a parenteral boost with commercial Vi polysaccharide vaccine.

R and D Required: Completion of clinical testing.

Licensing Potential: UMB seeks partners for completion of clinical development.

Patent Status: U.S. Patent No. 6,190,669 Attenuated Mutants of Salmonella which Constitutively Express the Vi Antigen, issued February 20, 2001; issued patents in multiple European countries, Japan, Canada, and Australia; pending Indian patent application.

Related Publications:
- CVD 908, CVD 908-htrA, and CVD 909 live oral typhoid vaccines: a logical progression. Tacket CO and Levine MM. Clin Infect Dis. 2007 Jul 15;45 Suppl 1:S20-3. Review.
- Cell-mediated immune responses in humans after immunization with one or two doses of oral live attenuated typhoid vaccine CVD 909. Wahid R, Salerno-Goncalves R, Tacket CO, Levine MM, Sztein MB. Vaccine. 2007 Feb 9;25(8):1416-25.
- Recombinant Salmonella enterica serovar Typhi in a prime-boost strategy. Vindurampulle CJ, Buberos LF, Barry EM, Pasetti MF, Levine MM.

Vaccine. 2004 Sep 9;22(27-28):3744-50.

- Immune responses to an oral typhoid vaccine strain that is modified to constitutively express Vi capsular polysaccharide. Tacket CO, Pasetti MF, Sztein MB, Livio S, Levine MM. J Infect Dis. 2004 Aug 1;190(3):565-70.
- Animal models paving the way for clinical trials of attenuated Salmonella enterica serovar Typhi live oral vaccines and live vectors. Pasetti MF, Levine MM, Sztein MB. Vaccine. 2003 Jan 17;21(5-6):401-18. Review.

Files:

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