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Salmonella Vaccine Against Bacterial Enteropathogens

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Intellectual Property Status:

Patent Pending

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Invention Description

Diseases caused by enteric bacterial pathogens are a major problem worldwide. They are estimated to cause over 2 million deaths each year. Many of these pathogens are carried by animals reared for food, such as poultry and swine. The bacteria can also be transmitted to humans by contaminated food and water.

In developing countries, bacterial enteropathogens in food animals are a major factor that decreases the productivity of livestock. This can contribute significantly to food shortages. Thus, it is expected that vaccines to prevent these diseases will provide, not only improved animal health, but also better health and nutrition for the human population.

Professor Roy Curtiss and his colleagues at Arizona State University's Biodesign Institute have developed several robust *Salmonella* vaccine strains capable of preventing infection by a variety of these medically important enteric pathogens.

These live vaccines are safe and suitable for intranasal and oral delivery in humans and animals. The vaccine strains can withstanding the biological stresses imposed by human or animal hosts, and this allows them to invade host gut lymphoid tissues thereby stimulating a strong, protective immune response.

Having provoked the desired immune response, the recombinant vaccine strains have further been engineered to lose some of their wild-type attributes, preventing any permanent colonization and making them easy targets for clearance by host defenses.

Potential Applications

- **Swine and Poultry Vaccination -** enhanced food safety by diminishing the possibility of transmitting bacterial enteropathogens to humans through the food chain
- **Human Vaccination -** prevents Travelers' Diarrhea and, especially in the developing world, reduces the estimated 2 million annual deaths due to bacterial diarrheal diseases

Benefits and Advantages

- Minimally induced immune response
- Cross protective immunity to bacterial enteric pathogens
- Inoculation across species