ABSTRACT OF THE INVENTION

NOVEL RECOMBINANT *BORDETELLA* STRAINS

The present invention relates to a genetically attenuated *Bordetella pertussis* strain comprising a mutated pertussis toxin (*ptx*) gene, and a heterologous *ampG* gene and expressing a hybrid protein comprising the N-terminal fragment of filamentous haemagglutinin (FHA) and a heterologous epitope or antigenic protein or protein fragment, different from FHA, wherein the gene coding for the native FHA protein is inactivated.

The invention further provides a life attenuated vaccine for the treatment of a mucosal or systemic infectious disease comprising a *Bordetella pertussis* strain as defined above intended to elicit a immune response against pathogens responsible for systemic or mucosal infections, including of the upper or lower respiratory tract.

The present invention also relates to a method for prophylaxis of an infectious disease in a mammal, comprising administering to said mammal an effective amount of a vaccine comprising in a suitable vehicle a genetically attenuated *Bordetella pertussis* strain comprising a mutated pertussis toxin (*ptx*) gene, and a heterologous *ampG* gene and expressing a hybrid protein comprising the N-terminal fragment of filamentous haemagglutinin (FHA) and a heterologous epitope or antigenic protein or protein fragment, different from FHA, wherein the gene coding for the native FHA protein is inactivated .

The invention provides a method for enhancing the immune response toward a pathogen, in a mammal, comprising administering a vaccine based on a *Bordetella* recombinant vector, wherein said *Bordetella* expresses a fusion protein comprising the N-terminal fragment of filamentous haemagglutinin (FHA) and a heterologous epitope or antigenic protein or protein fragment of said pathogen against which the immune response is sought and wherein in said recombinant strain, the gene coding for the native FHA protein is inactivated.

No suitable figure to accompany Abstract