

A STRAIN OF RECOMBINANT MYCOBACTERIUM BOVIS BCG LACKING BCG1419C GENE WITH THE INCREASED CAPACITY TO FORM BIOFILMS

<i>Offering Organization:</i>	Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C.
<i>Type of Organization:</i>	Public Research Center
<i>Development Stage:</i>	Laboratory Tests
<i>Desired Relationship:</i>	<ul style="list-style-type: none"> – Technological research and development financing (technological partner) – Specialized application tests – Creation of a new company (Joint Venture) for the commercialization of the products outlined herein – Licensing of patents
<i>Sector:</i>	Biomedical Biotechnology
<i>Area of knowledge:</i>	Medicine
<i>Key words:</i>	<i>Mycobacterium bovis</i> , BCG, <i>in vitro</i> , vaccine

DETAILED DESCRIPTION:

Problem to be solved:

Currently, tuberculosis (TB) is a major public health problem. It is the disease of bacterial origin with the highest rate of morbidity and mortality worldwide. The World Health Organization (WHO) estimated that in 1990 there were 8 million new TB cases and 3 million deaths worldwide, 95% of which occurred in developing countries. This situation forced the WHO in 1993 to declare TB as a global public health emergency and to devise strategies to control it.

Solution:

The present invention refers in particular to a strain of *Mycobacterium bovis* BCG, lacking the BCG1419c gene, with registration number PTA-120 572, capable of forming 3-15% more biofilms *in vitro* compared to unmodified BCG, and able to stop weight loss in animals vaccinated at levels comparable to BCG but applied at a lower dosage.

New and Innovative Aspects:

It allows for the formation of 3-15% more biofilms *in vitro* compared with unmodified BCG, and is capable of halting weight loss in animals thus vaccinated at levels comparable to BCG but applied at a lower dosage.

TECHNICAL CHARACTERISTICS:

The present invention provides for a strain of *Mycobacterium bovis* BCG, lacking the BCG1419c gene and characterized by having the access number PTA-120 572, where the BCG1419c gene has been exchanged for a hygromycin resistance gene by homologous recombination. With respect to unmodified BCG, the strain described here, BCG Δ BCG1419c, increases the *in vitro* biofilm production 3-15%, modifies the expression of at least 9 proteins during biofilm formation, increases 3-6 times the persistence in lungs and spleen of BALB/c immunocompetent mice, and stabilizes the weight loss of vaccinated mice later infected with *M. tuberculosis* H37Rv at similar levels, despite a

lower administered dose.	
<i>Main advantages derived from its utilization:</i>	
<ul style="list-style-type: none"> - The BCGΔBCG1419c strain could serve as a vaccine against latent tuberculosis. - It is capable of forming 3-15% more biofilms <i>in vitro</i> compared with unmodified BCG. 	
<i>Applications:</i>	
<ul style="list-style-type: none"> - Vaccines 	
INTELLECTUAL PROPERTY	
<ul style="list-style-type: none"> - Patent filed in 2013 - MX/a/2013/013771 	
ABOUT THE OFFERING ORGANIZATION	
<i>Presentation:</i>	El Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C. (CIATEJ) is a public research center that belongs to the national technology development and innovation network, the National Council for Science and Technology (CONACyT). CIATEJ is focused on the agricultural, food, health, and environmental sectors with an emphasis on the application of innovative biotechnology.
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