



New method to test tuberculosis virulence

A new easy, fast and reliable method to determine the virulence of *Mycobacterium tuberculosis* (MTB) has been developed by a group of scientists from UPC and IGTP. Partners to further develop the technology and/or to establish commercial agreements along with technical cooperation are sought.

The Challenge

Tuberculosis is a disease caused primarily from airborne infection of alveolar macrophages by the bacillus *Mycobacterium tuberculosis*. In most cases, inoculation of the bacillus becomes a latent infection for years controlled by the host immune response. However, for a rate of 10% the infection can progress to disease years after inoculation. The virulence clinically considered as the capacity of producing illness, is determined by the progress to active disease. Virulence of MTB strains is ordinarily determined by its maximum growth rate in *in vitro* acellular medium or in *ex vivo* macrophages cultures.

Due to the emerging MTB strains and the difficulties to obtain reliable and fast results, new experimental models are sought to determine the potential virulence of a new detected clinical strain and to relate it to clinical relevance.

The Technology

The present patented invention relates a new a method to determine the virulence of MTB strains.

This method is based on the analysis and determination of the bacilli aggregates size distribution from samples obtained after culturing *M.tuberculosis* strains in liquid media until the exponential growth. The image analysis revealed 2 types of patterns suggesting more virulent strains to have more ability to form cords than less virulent strains. The pattern can be also easily determined by analysis of the sedimentation velocity profile.

Innovative advantages

Clinical strains could be classified according to their area distribution of cords and thus to estimate their virulence easily and fast.

Current stage of development

The potential of this new method has been tested *in vitro* and *in vivo* using seven clinical strains with epidemiological relevance in Spain within the last 20 years and high infectivity observed in macrophage infection plus high or low capacity of producing secondary cases. Such method has shown to be fast and easy. The correlation of the results and the epidemiology is planned to be confirmed using larger number of cases during next year.

Applications and Target Market

This technology represents the possibility of classifying MTB clinical strains according to their cording properties. This would be useful for analyzing the potential risk of recently isolated clinical MTB strains and thus allowing a better and more accurate medical prescription.

It could represent a new business opportunity specially for companies devoted to diagnostic tests manufacturing.

New experimental method to analyze the potential risk of clinical MTB strains



Easy and fast method to classify the strains using image analysis

Reliable tool to infer the virulence of a new strain

Business Opportunity
Technology available for licensing with technical cooperation

Patent Status
PCT application

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