Abstract

Tuberculosis is one of the important infectious diseases with the highest mortality rate worldwide. The control of tuberculosis infection is facing an even more strict challenge because of the evolving of drug-resistant clones and the co-infection of AIDS. Currently, the prevention of tuberculosis is mainly done by BCG vaccination, which is one of the most widely used vaccines. The advantages of BCG vaccine are its low cost, low side effects, and high stability. At present, the BCG potency is analyzed by calculating the growth of colonies after culture. However, the growth of BCG is pretty slow, sometimes it can take as long as two months and has made the in process control become very difficult. Therefore, the development of a rapid detection method with high sensitivity and high specificity not only can help to examine the in process control but also can monitor the inoculation potency and finally benefit the prevention of tuberculosis infection. The aim of this study was to establish a rapid, sensitive, and specific real-time quantitative PCR (Q-PCR) method for the detection of BCG potency and we have successfully established the BCG 16S ribosomal RNA gene Q-PCR detection system. We hope we will be able to apply this method as a tool for the in process control during the BCG vaccine production and to replace the time-consuming traditional culture method.

Keyword: Tuberculosis, BCG, real-time quantitative PCR