Abstract

In Taiwan, the infections of Mycobacterium tuberculosis increased gradually year by year. Meanwhile, the Mycobacterium tuberculosis was the most common agent for clinical infections. Recently, the outbreak of multidrug resistant Mycobacterium tuberculosis (MDRTB) can cause the mortality of 72-89% and it was just 4-16 weeks from diagnosis to death. Furthermore, it is time consuming for the antibiotic susceptibility of Mycobacterium tuberculosis. Thus, it was the first case to develop a diagnostic method for detection of MDRTB under the threat of high mortality and fast course of infection. Isoniazid (INH), rifampin (RIF), and streptomycin (SM) are the first line anti-TB drugs. In present, there are mutations at the resistant genes in MDRTB. We can detect the MDRTB strains quickly by using the PCR and DNA sequencing methods followed by denaturing high performance liquid chromatography (DHPLC) and temperature modulated heteroduplex analysis (TMHA). The purpose of this project is to develop a technique to diagnose the MDRTB strains by using DHPLC analysis to detect the mutation pattern of resistant genes. We totally collected 80 MDRTB strains. After PCR amplification of resistant gene fragment, DNA sequencing, and DHPLC analysis, the mutant strains can be detected fast and accurately. To sum up, this project had developed a fast molecular diagnostic method to detect the MDRTB strains and it had a great benefit to the patients for the good medical care.

Keywords：Multidrug resistant Mycobacterium tuberculosis；resistant genes；Denaturing high performance liquid chromatography, DHPLC