INTRODUCTION

Tuberculosis is a leading cause of morbidity and mortality worldwide. According to World Health Organization (WHO): about one-third of the world's population is infected with *Mycobacterium tuberculosis* and about 8 million new cases of tuberculosis occur each year. Despite this large burden and intensive control efforts, only about 46% of the new infectious tuberculous cases are detected each year. ***(Kalantri., et al. 2005)***

The increase in the incidence of tuberculosis in certain parts of the world and the emergence of multi-drug resistant strains, has urged the need for its rapid diagnosis. The delayed identification and susceptibility testing of drug resistant Mycobacteria and failure to appropriately isolate contagious patients had helped much in transmission of multi-drug resistant (MDR) *Mycobacterium tuberculosis* ***(Rusch-Gerdes et al., 1999).***

Rifampicin resistance has been identified as a good predictor of MDR tuberculosis in many parts of the world. MDR commonly refer to resistance to at least the two most effective antituberculous drugs, rifampicin and isoniazid. It was established that a high percentage of rifampicin resistant tuberculosis are also resistant to isoniazid, making rifampicin resistance a useful marker for estimation of multi-drug resistance and indicated that the second and third line drugs to which this tuberculous infection is susceptible are urgently required ***(Watterson et al., 1998; Albert et al., 2002)***

Drug resistance may occur with the first tuberculous infection (primary) or occur in a person with a history of drug-sensitive tuberculosis (acquired resistance). Exogenous reinfection with resistant organisms has been documented in patients with multidrug- resistant disease, but is generally regarded as an uncommon cause of drug-resistant tuberculosis ***(Small, et al.,1993).***

Currently available techniques for susceptibility testing are culture based such as the proportion method (PM). These conventional methods require several months before results can be reported, the delay in reporting results lead to prolonged and inadequate treatment and may sustain transmission of drug resistant disease ***(Lemus, et al.,2004).***

A rapid mycobacteriophage-based techniques have been reported for detection of viable bacilli in clinical specimens as well as for rifampicin antimicrobial susceptibility testing in 48 hours**.** The main phage-based approach which is used to detect *Mycobacterium tuberculosis* is the amplification of phages after their infection of *Mycobacterium tuberculosis*, followed by detection of progeny phages using helper cells (plaque formation) ***(Trollip, et al.,2006; Yzquierdo, et al.,2006).***