CONCLUSION

In conclusion, the results of this study supports the use of MTBDRplus for rapid diagnosis of TB considering the drastic reduction of time in diagnosis and its accuracy being comparable to conventional methods. It might also be more cost effective in long run. This molecular genotyping will also be useful in studying epidemiological and mutational analysis of *M. tuberculosis* of specific regions. The study also supports MODS (Microscopic Observation Drug Susceptibility) method of DST to be comparatively rapid and cost efficient and very much suitable method in resource-limited regions like Northeast India.

The rare mutation detected by Genotype MTBDRsl in the gyrA MUT3D at D94H gene region of one sample of MDR supports the fact that the method is very much efficient in detecting rare mutation accurately.

The application of ARDRA on the 16S–23S rDNA region of the mycobacterial genome proved to be a rapid, simple and reliable method for the differentiation of mycobacterial species including those that are regarded as opportunistic pathogens. However, this gene region does not seem to have a similar potential for intra-species differentiation of *Mycobacterium tuberculosis*.

Although TB is curable disease, its rapid detection is prime importance in its treatment. The drug resistant TB has led to complexities of its treatment and thus rapid and efficient methodology of detecting drug susceptibility pattern has become very much important. All over the world especially the developing countries where resource are limited rapid detection of drug resistant TB is quite challenging in terms of cost efficient and its sensitivity. This study has highlighted the most probable methodology of analysing DST pattern along with molecular analysis for rapid detection of drug resistant TB strains in resource limited and high burden regions like Northeast India.

Public hospital or government hospital in this region should target to rapidly detect DST pattern and should not waste time in detecting it with traditional methodology, as time is prime importance in controlling the spread of drug resistant TB. Along with conventional methods, the molecular methods should be included in routine analysis of DST pattern as it is very efficient and rapid.
The prevalence HIV in the Northeast region of India is quite high and thus there is always a chance of co-evolution of TB with HIV leading to differential drug resistant pattern of TB. This relationship of co-evolution of TB and HIV should be studied urgently otherwise the current drug regimen for treatment of TB and its various drug resistant strains would become ineffective and drug itself would become totally useless for any further treatment.

Due to limitation in resources and interrupted drug supplies to the Northeast region for various unaccountable reasons, the regular treatment of TB is always hampered and has led to subsequent raise of drug resistant TB and affected the poor population of the region economically. Thus, the relapse case of TB is quite often encountered in this region. Further physician should always confirm the status of drug resistant TB before any prescription of drugs for which often leads to subsequent raise of drug resistance.