

Identification of mycobacteria

- The conventional method of identifying mycobacteria is by Ziehl Nelson (ZN) staining and culture growth on media. Specific media containing malachite green like the widely used egg-based Lowenstein Jensen (LJ) and agar-based media such as Middlebrook 7H10/11 are used for isolation.
- Mycobacterial isolation by culture can be supplemented with histopathology and other clinical presentations such as signs, symptoms, radiological scans, cytopathology, history and antibiotic susceptibility.
- Nucleic acid based amplifications by targeting genes like hsp65, rpoB, 16S rRNA, dnaJ, insertional sequences etc. is commonly applied for accurate and relatively rapid identification of mycobacteria.
- Multiplexing of primers targeting regions for genus confirmation as well as identification of species or complexes in a single tube reaction are also some good approaches for NTM and MTBC differentiation.

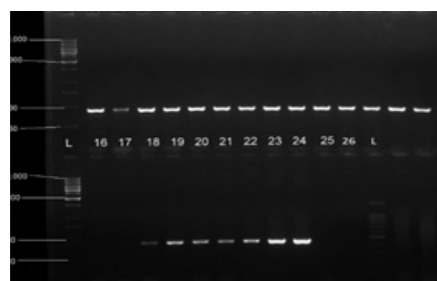


Fig 5. Mycobacterial identification at Animal Health Division, ICAR, Meghalaya, through partial amplification of hsp65 gene (441bp). L-Ladder; Lane 1- *M. tuberculosis*; Lane 2- *M. smegmatis*; Lane 3 to 24- Field isolates; Lane 25-Negative control; Lane 26-NTC.

Conclusion

Important distinguishing features of NTM and MTBC includes lower virulence of NTM; human-to-human transmission of *M. tuberculosis* is caused by inhaling bacilli-containing expectorated aerosol and through ingestion of *M. bovis* through contaminated milk, while NTM infections are mainly acquired directly from the environment. Although *M. tuberculosis*, *M. leprae* and *M. bovis* as a zoonotic pathogen are the best known human pathogens from the group, an increasing number of NTM are being constantly designated as human and animal pathogens making it

crucial for identification and discrimination of the pathogenic entities from the usual contaminants or the saprophytes. As pulmonary NTM can manifest TB, cautious diagnosis and treatment is also called for while managing TB cases in this TB-laden country. Eradication programs for bovine tuberculosis has been implemented in several countries which involves farm visits, inspection in abattoirs, controlled movement of herds, testing and culling of infected herds. However in countries like India, slaughtering of cows are prohibited due to religious sentiments, due to which the sick herds are isolated in separate sheds. Although vaccination is practiced in humans, treatment of these infected cattle are rarely attempted as it is expensive, requires long duration and care.

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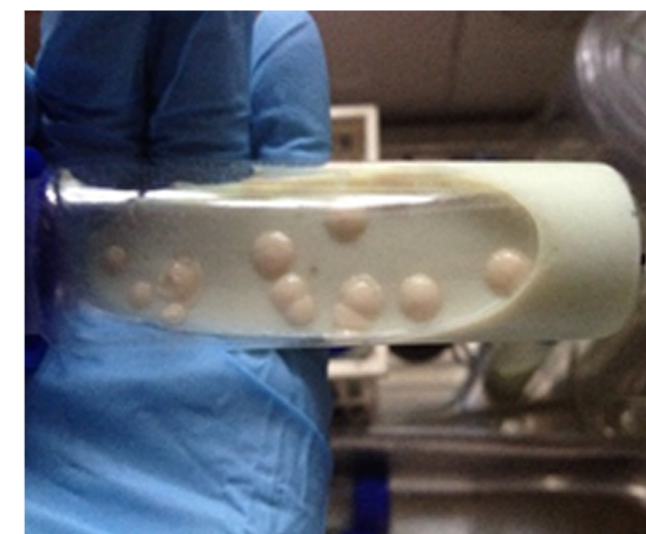
Published by
Director

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July 2018

Funded by DBT

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