

## **Mycobacterium tuberculosis complex in wildlife: review of current applications of antemortem and postmortem diagnosis**

### **ABSTRACT**

Tuberculosis (TB) is a chronic inflammatory and zoonotic disease caused by *Mycobacterium tuberculosis* complex (MTBC) members, which affects various domestic animals, wildlife, and humans. Some wild animals serve as reservoir hosts in the transmission and epidemiology of the disease. Therefore, the monitoring and surveillance of both wild and domestic hosts are critical for prevention and control strategies. For TB diagnosis, the single intradermal tuberculin test or the single comparative intradermal tuberculin test, and the gamma-interferon test, which is regarded as an ancillary test, are used. Postmortem examination can identify granulomatous lesions compatible with a diagnosis of TB. In contrast, smears of the lesions can be stained for acid-fast bacilli, and samples of the affected organs can be subjected to histopathological analyses. Culture is the gold standard test for isolating mycobacterial bacilli because it has high sensitivity and specificity compared with other methods. Serology for antibody detection allows the testing of many samples simply, rapidly, and inexpensively, and the protocol can be standardized in different laboratories. Molecular biological analyses are also applicable to trace the epidemiology of the disease. In conclusion, reviewing the various techniques used in MTBC diagnosis can help establish guidelines for researchers when choosing a particular diagnostic method depending on the situation at hand, be it disease outbreaks in wildlife or for epidemiological studies. This is because a good understanding of various diagnostic techniques will aid in monitoring and managing emerging pandemic threats of infectious diseases from wildlife and also preventing the potential spread of zoonotic TB to livestock and humans. This review aimed to provide up-to-date information on different techniques used for diagnosing TB at the interfaces between wildlife, livestock, and humans.

**Keyword:** Culture; ELISA; Gamma interferon test; Genotyping; Histopathology; *Mycobacterium tuberculosis* complex; Polymerase chain reaction; Wildlife