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Mycobacterial infection in the livestock and wildlife interface of Katavi Rukwa ecosystem, Tanzania

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Abstract

A comprehensive study on epidemiology and the transmission of bovine tuberculosis (BTB) in wildlife-livestock interface was undertaken in Katavi and Rukwa Ecosystem (KRE). 789 cattle were examined by tuberculin skin test and 328 livestock tissues were cultured. 178 wild animals were also sampled; among these, one hundred and nineteen tissue samples from various wild animal species were sampled opportunistically during professional hunting and game cropping operations in the KRE protected areas. The objective of the study was to generate data on epidemiology and transmission of BTB in the wildlife-livestock interface of the KRE. The study aimed to locate *M. bovis* and other members of the mycobacteria tuberculosis complex (MTC), determine the prevalence of the disease in livestock and wild animals as well as evaluating serological diagnostic novel test. Out of 789 cattle, the tuberculin skin test results indicate a BTB prevalence rate of 4.6 % at 95% Confidence interval CI [3.4-5.9]) and 10.7% (95% CI [7.8-11.9]) of 4 mm and 2 mm cut off respectively. The prevalence was significantly affected by the age and sex of the animals ($\chi 2 = 56.4$, $p<0.03$). Typical tuberculous lesions were detected in 80% of tuberculin reactor cattle tested from abattoirs; among these, four isolates were MTC and were further genetically classified. Three isolates were identified being *M. bovis* strains and only one isolate was *M. tuberculosis*. The *M. bovis* isolates were grouped into three clusters of strains, and the *M. tuberculosis* isolate was typified as EAI1-SOM. Three clusters of previously mentioned *M. bovis* strains were identified as SB0133 and SB1467 reported elsewhere in the world while a new spoligopattern was identified and reported for the first time. In the *M. bovis* spoligotype database the reference number SB2191 was given to this new spoligopattern. Non tuberculous mycobacteria were detected on 25.9% and 11.9% of livestock and wildlife tissue cultures respectively. The present study confirmed for the first time the presence of BTB in the KRE, this is alarming finding worth calling to initiate control strategies in order to prevent the disease from spreading to a larger area.

Biography

Zachariah E. Makondo has completed his Ph.D from Sokoine University of Agriculture (SUA) and currently a senior Veterinarian and Public Health specialist at the Tanzania Veterinary Laboratory Agency (TVLA) under the Ministry of Livestock and Fisheries Development of the United Republic of Tanzania. He is the TVLA head of Microbiology department and a Biorisk officer. He has undertaken over five contracted scientific research projects, and consultancy services in the public health, environmental issues, and socio economic studies. He has been an External Examiner/Referee and reviewer for numerous institutes and Universities, i.e. examinations moderator and academic staff referee/evaluator (e.g. candidates for professional positions).