



Contribution ID: 267

Type: **Poster presentation**

Detection and Isolation of Mycobacterium avium subsp. paratuberculosis in Intestinal Lesions of Slaughtered Sudanese Small Ruminants: Challenges for Public Health and Food Safety

Monday, October 13, 2025 6:49 PM (1 minute)

Mycobacterium avium subsp. *paratuberculosis* (MAP) is suspected to play a role in Crohn's Disease in humans, a gastrointestinal inflammation similar to paratuberculosis (PTB) in animals. Our reports that over 40% of patients with gastrointestinal disease complaints in the Sudan were positive for MAP and that the disease is present in all ruminant animals raised questions about the possible routes of MAP transmission to humans. Therefore, this study, conducted at Albaraka slaughterhouse (Omdurman) from October to December 2021, aimed at investigating MAP in intestinal lesions of slaughtered small ruminants. The viscera of 500 slaughtered animals were examined for gross lesions and samples were collected for further histopathology, bacteriology and molecular biology investigations. Gross lesions (N=31) observed were mainly enlargement of mesenteric lymph nodes, MLN, (N=30) and thickening of the ileum mucosa (N=1). Histopathological lesions including lymphoid tissue proliferation with villous atrophy in the small intestines and cortical lymphoid hyperplasia in the MLN were detected in 12 samples among which 4 were positive for acid-fast bacilli (AFB) in tissue smears stained with Ziehl-Neelsen (ZN) staining and for MAP DNA as well. MAP was isolated from 3 samples including one AFB- positive with no histopathological lesions. Overall, the samples that tested positive for MAP through real-time PCR and culture were also AFB-positive, with a positivity rate of 33% (4 out of 12). Detection and isolation of MAP in slaughtered small ruminants in the Sudan emphasizes public health concerns, especially in relation to food safety. These findings highlight the importance of routine MAP screening using ZN staining of direct tissue smears as a quick and simple method, especially at critical points, like slaughterhouses, to prevent food supply chain contamination and mitigate potential public health risks.

Keywords

Mycobacterium avium subsp. *paratuberculosis* (MAP), Small Ruminants

Registration ID

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Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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Session Classification: Snacks & Poster Viewing I

Track Classification: One Health in Public Health