Serological and Genetic Characterization of Foot and Mouth Disease Virus isolated during cross sectional surveillance studies in Cattle from Uganda during 2014

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Introduction

• Foot and Mouth Disease (FMD) is the most contagious disease of cloven footed animals

• Five (5) of the seven (7) serotypes (SAT 1, 2, 3 types, O types and A types) are presently circulating in East Africa

• Vaccination are quarantine are among the methods being used to control the spread of the disease
Introduction cont...
Introduction cont…

• Amongst the different serotypes, the FMD virus (FMDV) circulates as geographically distinct topotypes

• E.g. in Eastern Africa serotype O, topotypes EA 1-4 exist and for SAT 2 topotypes IV, VII and IX

• A vaccine that provides protection for one topotype may not provide immunity against another topotype

• It is therefore essential to characterize the current FMDV circulating in Uganda in order to design efficacious vaccines suitable for the country
Objective of the study

• Serological and genetic characterization of FMDV circulating in selected districts of Uganda

Methods

• Serum (4545) and oral-pharyngeal fluid samples (1300) were collected from cattle from 22/80 districts in the northern, eastern and central regions of Uganda
• Sera were analyzed by the presence of NSP
• Nucleotide sequences were determined for the P1 region to establish the FMDV serotypes and topotypes
Methods/ (Study Area)

Sera was collected from 4545 cattle from 22 out of the 80 districts in Uganda.

GPS sampled points in Uganda
NSP ELISA Results

• Positive cattle sera samples to the 3ABC ELISA kit (Prio Check; Prionics).

• >50% (2274/4545) of the serum samples collected from cattle were positive towards NSP antibodies.
Results/Summary

- FMD is prevalent in Uganda.
- 50% (2274/ 4545) of the serum samples collected from cattle were positive towards NSP antibodies.
- From this preliminary study, characterization of FMDV circulating in Uganda using serotype specific ELISAs and genome sequencing is recommended.
Methods cont... (collection of samples)
Methods cont... (Study Area)

- 25 representative districts from four regions of Uganda were sampled

- **Northern Uganda**
- **Western Uganda**
- **Central Uganda**
- **Eastern Uganda**
- **Districts sampled**
Results: Serotype O isolated in Eastern & Northern Uganda

Phylogenetic analysis of FMDV serotype O isolated from Northern and Eastern Region of Uganda during 2014
Results: Serotype SAT-2 isolated in western Uganda
Summary

• FMDV type-SAT-2, topotype X and type-O, topotype EA-2 were characterized from disease outbreaks in 2014

• This study provides knowledge about the geographical distribution of FDMV in Uganda

• These field circulating FMDV serotype O and SAT 2 viruses will assist in antigenic matching studies to devise improved FMDV control strategies with vaccination and for vaccine strain selection for Uganda
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Thank you for Listening!