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**Genotyping of Lumpy Skin Disease Virus Strains Circulating in Cattle During 2021-22 Outbreaks In Central Ethiopia**

**Shimels Tesfaye1,2\*, Mihiret Shimelis 2 ,Fikru Regassa 2,3, Jan Paeshuyse\* 1**

(1), Laboratory of Host‒Pathogen Interaction, Department of Biosystems, Division of Animal and Human Health Engineering, KU Leuven, 3001 Leuven, Belgium

(2), College of Veterinary Medicine and Agriculture, Addis Ababa University, Addis Ababa, Ethiopia

(3) Ministry of Agriculture, Livestock and Fisheries, Addis Ababa P.O. Box 62347, Ethiopia

(4) National Veterinary Institute (NVI), Debre Zeit, Ethiopia

Leader presenters [shimels.megersa@kuleuven.be](mailto:shimels.megersa@kuleuven.be) (S.T.M) , Ethiopian or

jan.paeshuyse@kuleuven.be (J.P**.). Belgian**

**Abstract:**

**Background/Objective:** Lumpy skin disease (LSD) is classified as a notifiable cattle disease by the World Organization for Animal Health (WOAH) due to its rapid incursions and significant impact on cattle productivity. The present study was designed to investigate lumpy skin disease(LSD) dynamics in the central part of Ethiopia through outbreak investigation, virus isolation, genotyping of the virus isolates.

**Methods:** The study was conducted from 2021 to 2022, focusing on areas with reported outbreaks in central Ethiopia. The investigation comprised two main components: a survey based on questionnaires and genotyping of LSDV isolates. The questionnaire captured essential information such as herd structure, outbreak incidence, affected animals, vaccination status, and timing of vaccination relative to the outbreak. Genotyping started from an outbreak investigation to identify and document clinical cases and virus isolation. The virus is subsequently isolated using MDBK cell lines for virus detection and genotyping. In genotyping, the amplified DNA sequenced, and the sequences were subjected to phylogenetic analysis to determine the genetic relatedness of the LSDV isolates.

**Results:** In this study it was found that LSD had a 3.41% morbidity rate and 0.94% mortality rate in cattle. Morbidity rates varied by breed and vaccination status, with local breed cattle having a higher rate (5.92%) than cross-breed cattle (2.24%). Vaccinated cattle had a lower morbidity rate (2.58%) than non-vaccinated cattle (5.24%). The study also identified clinical signs in LSD-suspected cattle, including fever, depression, enlarged lymph nodes, loss of appetite, skin nodules, lacrimation, nasal discharges, and weight loss. The phylogenetic analysis was also successfully grouped nine newly discovered Ethiopian isolates (i.e., LSDV strains) with previously isolated Ethiopian strains from central part of Ethiopia.

**Conclusion**: In this study, the results from both the survey and genotyping provided valuable information to support ongoing efforts to improve the LSD vaccine in Ethiopia.

**Keywords:** Lumpy skin disease, outbreak investigation, viral isolation, genotyping, Ethiopia