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# A REVIEW ON: LUMPY SKIN DISEASE

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## ABSTRACT

LSD is an important transboundary disease affecting the cattle industry worldwide. The objectives of this study were to determine trends and significant change points, and to forecast the number of LSD outbreak reports in Africa, Europe, and Asia. LSD outbreak report data (January 2005 to January 2022) from the World Organization for Animal Health were analyzed. We determinedstatistically significant change points in the data using binary segmentation, and forecast the number of LSD reports using auto-regressive moving average (ARIMA) and neural network auto-regressive (NNAR) models. In 2019, no lumpy skin disease (LSD) outbreaks were reported in South-Eastern Europe, the mass vaccination regional campaign with homologous LSD vaccine continued for the fourth year with over 1.8 million bovines vaccinated in the region, preventing further outbreaks since 2016. LSD outbreaks were reported in Turkey, including western Turkey, in Russia and in eastern Asia affecting China, Bangladesh and India for the first time. The use of homologous vaccine should be considered in the countries still affected in order to eliminate the virus. Besides passive surveillance, which is implemented in allthe countries, active surveillance for early detection based on clinical examination could be conducted ideally during April– October every 5 weeks in at-risk areas, based on possible re-emergence or reintroduction from affected neighbouring countries. Active surveillance for proving disease freedom could be based on serological testing (enzyme-linked immunosorbent assay (ELISA)) targeting 3.5% seroprevalence and conducted on a random sample of cattle herds on nonvaccinated animals. LSD re-emerged in Israel in 2019, after vaccination became voluntary. This shows that, if the virus is still circulating in the region, the reduced protection might result in re-emergence of LSD. In case of re-emergence, a contingency plan and vaccine stockpiling would be needed, in order to react quickly. From a

study performed in Israel to test side effects of live-attenuated homologous LSD vaccine, milk production can be reduced during 7 days after vaccination (around 6–8 kg per cow), without a significant loss in the 30 days after vaccination. Research needs should be focused on the probability of transmission from insect to bovine, the virus inactivation rate in insects, the collection of baseline entomological data, the capacity of vector species in LSDV transmission linked to studies on their abundance and the control of Stomoxys calcitrans being the most important vector in LSD transmission.

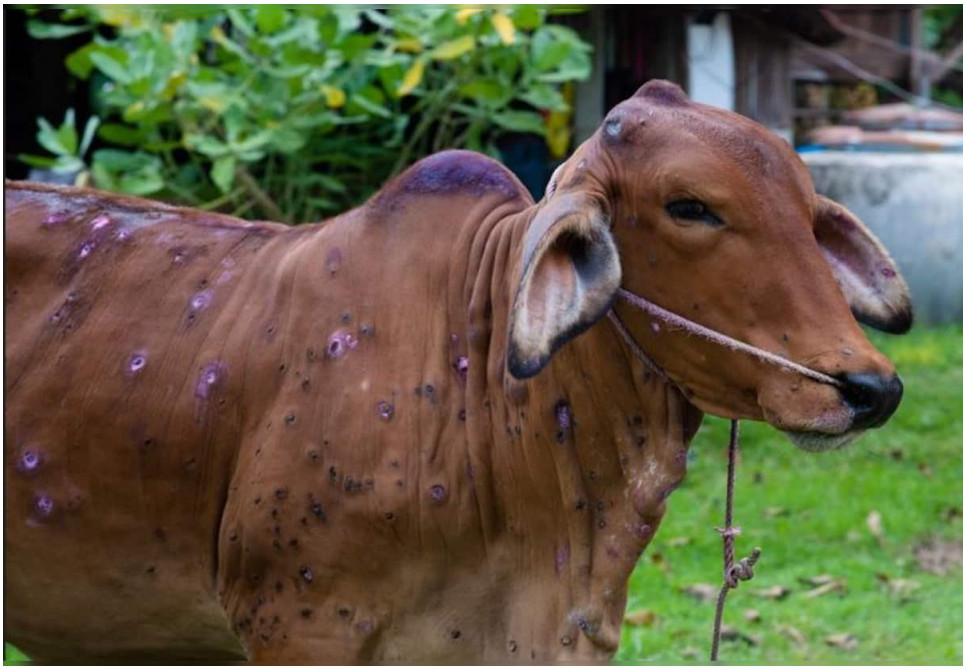
**KEYWORDS**

1. Lumpy skin disease.
2. Vaccine
3. Vaccination
4. Control.
5. Eradication.

## INTRODUCTION

LSD is a viral disease of cattle that reached continental Europe via Turkey in 2015, affecting North Eastern Greece, between August and December. The disease returned again in the spring of 2016, this time affecting seven countries of SouthEastern (SE) Europe with numerous outbreaks, namely Greece, Bulgaria, (the Republic of) North Macedonia, Serbia, Kosovo*, Albania and Montenegro. By 2017, thanks to the coordinated vaccination campaigns in all affected countries of SE Europe (annual vaccination of all cattle, with live homologous vaccines, since 2016) the disease was contained. In addition, two non-affected countries resorted to LSD vaccination too, as a preventive measure, namely Croatia (2016-2017) and Bosnia and Herzegovina (2017). As a result of this combined effort, no new LSD outbreaks were reported in those countries where sufficient vaccination coverage was achieved In addition, 2019 will be the fourth consecutive year of mass LSD vaccination across South-East Europe and the countries in the region, affected or at risk for LSD, have already expressed their will to collaborate in drafting an LSD exit strategy. LSDV is a member of the Poxviridae family's Chordopoxvirinae s ubfamily and the genus Capripoxvirus (CaPVs). The Poxviridae family is distinguished by its large and complex genome, which is made up of a single, linear molecule of ds DNA that codes for about 200 proteins and is divided into two subfamilies: Chordopoxvirinae, which is responsible for vertebrate poxviruses, and Entomopoxvirinae, which is responsible for insect poxviruses. The

genus Capripoxvirus includes viruses including lumpy skin disease virus (LSDV) and sheep and goat poxviruses (SPPV and GTPVThere has been little research on the diagnostic procedures and epidemiological aspects of LSD, and there is a lack of public knowledge about the disease's relevance. A detailed investigation of the epidemiological characteristics of LSD and its diagnostic procedures may aid in disease control and prevention. Diagnosis of Lumpy Skin Disease in Cattl.



❖ Diagnosis of Lumpy Skin Disease In Cattle

Histopathology, virus isolation, or PCR The disease may be confused with the less clinically important pseudo-lumpy skin disease, which is caused by a herpesvirus (bovine herpesvirus 2). These diseases can be similar clinically, although in some parts of the world the

herpesvirus lesions seem confined to the teats and udder of cows, and the disease is called bovine herpes mammillitis. Pseudo-lumpy skin disease is a milder disease than true lumpy skin disease, but differentiation depends essentially on isolation and/or identification of the causal virus. The pox virus of lumpy skin disease can be demonstrated by electron microscopy in the early skin lesions. The two diseases can be distinguished by PCR. Dermatophilus congolensis also causes skin Treatment and control strategies Prophylactic actions of LSD is hardly attempted in epidemic situations other thn the symptomatic and supportive treatment like wound repair sprays and antibiotic drugs to restrain the secondary bacterial infections of the skin abrasions. Anti-inflammatory drugs and intravenous fluid therapy might be administered to upsurge the appetite although it has no prolific feedback. Literally, no precise antiviral drugs are available for the treatment of LSD, thus prevention through vaccination is the only effective way of restraining the disease. Prophylactic immunization with homologous (Neethling strain) or heterologous live attenuated vaccine (Sheep/Goat pox vaccine) is the best medical prophylaxis for LSD.

Recently, Bangladesh procured “Lumpyvax”, a commercially available vaccine from MSD Animal Health.) for immediate control of the current and seemingly rampant LSD outbreaks in the country. In addition to medical prophylaxis, several other zoo sanitary prophylactic measures are helpful in the control of LSD in domestic animals. These include movement control, restricted grazing, stamping out of severely affected animals, apposite disposal of infected carcass, washing with disinfectant of contaminated premises, use of pest repellents, strict quarantine and finally, disease awareness campaigns targeting veterinary students and professionals, farmers, herdsmen, animal traders, truck drivers, and artificial inseminators.

## CONCLUSIONS AND RECOMMENDATIONS

To recapitulate, this review summarizes eight virgin hotspots and their extent for the Lumpy Skin Disease (LSD) in South- East Asian cattle. The disease has become an extreme threat for marginal farmers. Until nineteenth century, the disease was endemic in greater Africa, which then outstretched into the Middle East, Eastern Europe, and the Russian Federation and recently in Asia. The recurrent assault by LSD in vulnerable areas has stricken the attention of the scientific community. Hence, it is needless to say, this is the high time to anticipate emergency preparedness to limit this trans-boundary disease from spreading enormously. Attention should be concentrated on vector control, movement restriction, harsh quarantine, improved vaccination programs, proper veterinary care, and overall farm sanitary

management to avoid incursion and spread of the contagion. Thus, the study encourages future scholars to focus on identifying the source of infection, molecular detection and characterization of the causal agent, and finally, the epidemiology and ecology of LSDV in Southeast Asia.

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