



Vaccination against lumpy skin disease in Western Balkan

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VETERINARY EXPERTISE FOR CONTROLLING LUMPY SKIN DISEASE, SHEEPPOX AND GOATPOX

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Major challenges for effective control and surveillance of LSD

- ▶ Socio-economic impact of LSD is massive throughout the whole cattle farming industry - Small-holders and poor back-yard farmers being worst hit
- ▶ Seasonal movement of cattle is difficult/impossible to halt
- ▶ Holdings are located in very short proximity to each others and using communal pastures – making the whole village as one epidemiological unit thus affects the feasibility/affordability of total stamping-out policy
- ▶ Small-holdings or beef cattle in remote location at the high altitude in the mountains
 - ▶ Major logistic challenge, time-consuming transport, roads are bad/unsafe in some weather conditions
 - ▶ In some cases VS are lacking vehicles or other means of transport or petrol
- ▶ Disposal of infected carcasses on-site is hampered by availability of suitable land, presence of ground water and availability of excavators



Two equally effective live attenuated LSDV vaccines available



- ▶ Vaccine is **expensive** with varying price (approximately € 1.4-1.8)
 - ▶ Tendering process prior to purchase of vaccine, slowing the onset of vaccination campaigns
 - ▶ Both manufactures have their requirements how they want payments
 - ▶ It may take some weeks for producers to provide the vaccines
- ▶ LSDV is stable and survives in the environment – vaccination coverage should remain 100%
 - ▶ New animals should be immunized before introduction to affected farms
 - ▶ Calves from vaccinated/naturally infected mothers should be immunized at the age of 3 to 4 months – individually or during next round of vaccinations
- ▶ **Feasible package size** to suit the numbers of vaccinated animals to avoid waste of vaccines
 - ▶ OBP vaccine 25 and 50 doses vials
 - ▶ MSD Lumpyvax 10 and 100 doses vials
- ▶ Are the vaccines produced according to **Good Manufacturing Process (GMP)** standards?
- ▶ **Adverse reactions caused by two vaccines could be investigated in Croatia (no interference by the field strain)**

Sheeppox vaccines used in cattle against LSD

- ▶ Yugoslavian SPPV RM-65 (Jovac/Jordan, Abic/Israel) (10 x sheep dose)
- ▶ Turkish Bakirköy SPPV strain (3 to 4 x sheep dose) (Panpox, Pendik Institute)
- ▶ Romanian SPPV strain in the Middle East
- ▶ KSGP O-240 and O-180 strains have been characterized as LSDV – these vaccines are not recommended for cattle against LSDV until safety and efficacy have been tested using challenge experiments



Attenuated Goatpox vaccine – Gorgan strain

- ▶ A commercially available GTPV vaccine, same strength for cattle and goats
- ▶ Good protection in cattle against highly virulent Ethiopian LSD field strain (Gari *et al* 2015)
- ▶ Efficacy has been evaluated by scientist at Coda Cerva – publication is ongoing
- ▶ Large scale field experiments in cattle ongoing in Lebanon and in sheep against SPPV in Jordan
- ▶ Ideal product for those regions where both LSD and GTP coexist
- ▶ No side effects in cattle
- ▶ One vaccine for both cattle and goats – reduces the price
- ▶ Why GTPV is better than SPPV against LSD – likely be genetic

Contents lists available at ScienceDirect

 **Vaccine** 

journal homepage: www.elsevier.com/locate/vaccine

Evaluation of the safety, immunogenicity and efficacy of three capripoxvirus vaccine strains against lumpy skin disease virus 

Getachew Gari^{a,*}, Getnet Abie^a, Daniel Gizaw^a, Alehegn Wubete^a, Membere Kidane^a, Hagos Asgedom^a, Berecha Bayissa^b, Gelagay Ayelet^b, Christopher A.L. Oura^c, Francois Roger^c, Eeva S.M. Tuppurainen^d

 **genome**Announcements 

Complete Genome Sequence of the Goatpox Virus Strain Gorgan Obtained Directly from a Commercial Live Attenuated Vaccine

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Inactivated vaccine in a pipeline

- ▶ Development work is on-going by a producer
- ▶ Challenge testing in controlled environment by Coda Cerva – publication of the results ongoing
- ▶ Protection is not as good as provided by live LSD vaccines
- ▶ Ideal for trade of fully susceptible cattle from disease-free to affected countries
- ▶ Vaccination of animals in a country of origin 3 to 4 weeks before transportation and on arrival a booster with a live vaccine

Boumart et al. *BMC Veterinary Research* (2016) 12:133
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BMC Veterinary Research

RESEARCH ARTICLE

Open Access

Comparative innocuity and efficacy of live and inactivated sheeppox vaccines



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Success of the vaccination campaign depends on

- ▶ Efficacy of the vaccine product and sufficient coverage (80-100%)
- ▶ Capacities of veterinary services to carry out vaccination campaign, other control/eradication measures and surveillance programmes
- ▶ **Electronic database including cattle ID/ vaccination/health records/ cattle movement history**
- ▶ Control of cattle trade and cattle movements
- ▶ Stamping-out policy in place
- ▶ Diagnostic capacity of national reference laboratory



Cattle ID, vaccination, health and movement database

- ▶ Quality of the existing databases vary between excellent to very basic in affected countries
- ▶ Often separate databases for ID and movement, vaccination records and health records
- ▶ Should be combined to one user-friendly system
- ▶ Challenges:
 - ▶ Farmers are responsible of covering the costs the registration process (calves 21 days after birth) and the ear tags
 - ▶ In practice some animals may lose their ear tags
 - ▶ Database may contain animals that do not exist any more - Cattle slaughtered for own use are not deleted from the database
 - ▶ Register should comprise also cattle trader facilities, cattle market places, permanent and temporary slaughterhouses
- ▶ Database should be on the top of the priority list for government funding and for international projects carried out in the region





Struggle to control cattle movements



- ▶ Cattle movements although strictly regulated by the EC directives and national legislation
- ▶ Ban the cattle markets and exhibitions
- ▶ Unauthorized cattle movements occur within affected countries and across the borders
 - ▶ Farmers may own grazing lands and families are divided on the both sides of the borders and price of cattle determinates the direction of transboundary movements
 - ▶ Traditional farming and seasonal grazing practices are difficult to suddenly halt and if prevented is likely to become swiftly an animal welfare issue
- ▶ Limited efficacy of the short distance movement restrictions due to vector transmission, high cattle density in the village and communal grazing
- ▶ Necessary legal powers should be in place to cover the actions if unauthorized animal movements are caught on the move
- ▶ Underlines importance of regional mass vaccination

Game changers for eradication of LSD within EU MS

- ▶ EC vaccine bank for LSD allows countries to initiate swift vaccination campaigns
- ▶ Recent revision of EC directives/implementing decisions facilitate preventive vaccinations in at-risk countries
 - ▶ free with vaccination - zone introduced (along with infected zone)
 - ▶ Reduced impact on trade of safe or low risk products (meat , milk)
 - ▶ trade of live vaccinated bovines possible with requirements (bilateral agreements)
- ▶ Croatia - started in in late September 2016 and currently 95-100% of cattle are vaccinated in selected at-risk zones
- ▶ Preventive vaccination is highly recommended at high-risk countries

17.11.2016	EN	Official Journal of the European Union	L 310/51
COMMISSION IMPLEMENTING DECISION (EU) 2016/2008 of 15 November 2016 concerning animal health control measures relating to lumpy skin disease in certain Member States (notified under document C(2016) 7023) (Text with EEA relevance)			

L 310/66	EN	Official Journal of the European Union	17.11.2016
COMMISSION IMPLEMENTING DECISION (EU) 2016/2009 of 15 November 2016 approving the vaccination programmes against lumpy skin disease submitted by the Member States (notified under document C(2016) 7219) (Only the Bulgarian, Croatian and Greek texts are authentic) (Text with EEA relevance)			

Harmonized regional vaccination provides best protection



- ▶ It's highly likely that vaccinations cannot be stopped for years to come
- ▶ Harmonised regional vaccinations is ideal because
 - ▶ Unauthorized transboundary cattle movements
 - ▶ Traditional farming practises - Vaccination prior to/from moving cattle to summer/winter pastures
 - ▶ Cattle ID and vaccination record database throughout the region are not yet leak-proof
- ▶ Some open questions and practical issues to be investigated:
 - ▶ Are annual vaccinations really required? Would vaccination every second year be sufficient?
 - ▶ Can LSDV vaccine be administrated simultaneously with the other obligatory vaccines and does it interfere other cattle testing regimes (such as intradermal tuberculin testing)
 - ▶ What would ideal timing to vaccinate those calves that born after the vaccination campaign – once a year campaign or individually when coming to age of 3 to 4 months

Surveillance programmes in the Western Balkan

▶ Strengths:

- ▶ Good awareness levels in general by all stakeholders of the cattle farming industry
- ▶ Notification and information exchange has been swift and transparent by all affected countries across the region
- ▶ Effective vaccine is available and veterinary services in the region are experienced to carry out vaccination campaigns
- ▶ National reference laboratories have already good diagnostic capacities and training on diagnostic methods is well organized (IAEA/FAO, Coda Cerva, Pirbright and collaboration between neighbouring countries)



Surveillance programmes in the Western Balkan

- ▶ Challenges:
 - ▶ Vaccination of the whole cattle population has not been completed in all affected countries
 - ▶ Fully functional cattle ID/vaccination/laboratory database in some cases still lacking
 - ▶ Control of cattle movements is challenging - both transboundary and within the countries
 - ▶ Veterinary services are under exceptionally heavy workload
 - ▶ Other disease outbreaks
 - ▶ Lack of funding for more staff, vehicles or other suitable means of transport, as well as petrol
 - ▶ Consequently, the basic veterinary infrastructure is not able to carry out effective surveillance

What next?

- ▶ Threat of spread of the disease from the East
- ▶ In the countries at risk need to enhance preparedness by
 - ▶ Providing training and raising awareness
 - ▶ Preparing contingency plans and legal framework
 - ▶ Setting up laboratory capacities for LSD
- ▶ Quiet winter time two (maximum of three) months



Missions and workshops on LSD between 2012-2016

- ▶ Israel (Sept 2012) (mission as a role of an OIE LSD expert requested by Israeli Veterinary Services)
- ▶ FAO and EUFMD – laboratory workshop in Turkey (Aug 2014)
- ▶ European Commission CVET missions
 - ▶ Cyprus (CVET missions in Dec 2014 and Jan 2015 and FAO/EUFMD lab training Jun 2015)
 - ▶ Greece (CVET missions in Nov 2015, Apr 2016 and BTSF LSD training in Nov 2015)
 - ▶ Romania (Jun 2016) – not infected but at risk
 - ▶ Former Yugoslav Republic of Macedonia (Jun 2016)
 - ▶ Serbia (Jun 2016)
- ▶ Short term expert missions under BTSF initiative
 - ▶ Montenegro (Aug 2016)
 - ▶ Bosnia and Herzegovina (Sept 2016)
 - ▶ Albania (Oct 2016)
 - ▶ Kosovo (Sept 2016)
 - ▶ Moldavia (Dec 2016)

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Thank you for your attention!

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