EXTERNAL REFERENCES

ID SCREEN® EHDV COMPETITION

Last update: September 2025

Publications / References:

PERFORMANCE EVALUATION

1)Bréard E. *et al.* (2020). **Evaluation of a commercial ELISA for detection of epizootic haem orrhagic disease antibodies in domestic and wild ruminant sera**. Transbound Emerg Dis. 00:1–7.	• Performance evaluation of the ID Screen® EHDV Competition: ○ specificity was evaluated on 1151 ruminants (cattle, sheep, goats, wild deer) from France that had never been infected with EHDV. ○ exclusivity was tested on 803 samples from sheep, goats, cattle, zoo ruminants and deer and having been infected and/or vaccinated against BTV. ○ a collection of 30 sera from 5 calves experimentally inoculated with EHDV-6 and sampled at different days of infection was tested in parallel with another c-Elisa test (no longer on the market). ○ 7 samples from seven calves each inoculated experimentally with one of the 7 EHDV serotypes were also examined ○ 166 bovine sera from an orbivirus-infected area were tested with both tests to evaluate their concordance ○ reproducibility was evaluated with 5 sera tested in 14 tests. • *Results*: ○ specificity: 100% ○ measured exclusivity against BTV: 99.8% ○ EHDV-6 experimental study: antibodies were detected in cattle until 28 days post-infection with both tests. ○ both tests detected antibodies in sera from calves inoculated with serotypes 1, 2, 5, 6, 7 and 8; serum from the cattle inoculated with	Comparison with competitors	Test of particular species			

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	serotype 4 was found to be negative with both tests. ○ strong concordance between the 2 tests: 95.8%. ○ high reproducibility: coefficient of variation11.1%. ***The results obtained for specificity (in naïve or BTV-infected ruminants, whether wild or domestic), reproducibility and sensitivity (evaluated by concordance with results obtained with the EHDV kit A) showed that this kit can be used for EHDV serological diagnosis*. (sic)**

EPIDEMIOLOGICAL STUDIES

CATTLE

2)Anthonioz C. *et al.* (2025). **Heterogenous within-herd seroprevalence against epizootic hemorrhagic disease virus type 8 (EHDV-8) after massive virus circulation in cattle in France, 2023**. Frontiers in Veterinary Science, 12, 1562883.	• 2762 sera from cattle in 30 herds with EHDV outbreaks (group A) and 31 herds in which no clinical case were reported (Group B) were analyzed using the ID Screen® EHDV Competition ELISA. • *Results*: ○ seropositive animals were detected on 26/30 in Group A (86.6%) and on 24/31 in Group B (77.4%). ○ at animal-level: overall seroprevalence was 41,7%.
3)Chiuya T. *et al*. (2024). **Exposure to arboviruses in cattle: Seroprevalence of Rift Valley fever, bluetongue, and epizootic hemorrhagic disease viruses and risk factors in Baringo County, Kenya**. Pathogens, 13(8), 613.	• 400 cattle sera from 34 herds were analyzed using the ID Screen® EHDV Competition ELISA. • *Results*: seroprevalence was: ○ at animal-level: 91% ○ at herd-level : 100%.
4)McVey D.S. *et al.* (2024). **Evidence of active orbivirus transmission in 2016 in Kansas and Nebraska**. Vector-Borne and Zoonotic Diseases, 24(6), 390-395.	• 450 cattle sera from 9 zones in Kansas were tested using the ID Screen® EHDV Competition ELISA. • *Results*: seroprevalence was high in all the zones (between 78 and 100%).

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5)Bréard E. *et al.* (2023). **Circulation of Bluetongue Virus Serotypes 1, 4, 8, 10 and 16 and Epizootic Hemorrhagic Disease Virus in the Sultanate of Oman in 2020–2021**. Viruses, 15(6), 1259.	• 96 cattle sera were analyzed using the ID Screen® EHDV Competition ELISA. • *Results*: Seroprevalence was 51%.					
6)Lorusso A. *et al.* (2023). **Epizootic hemorrhagic disease virus serotype 8, Italy, 2022**. Emerging Infectious Diseases, 29(5), 1063.	• 10 sera from cattle showing clinical signs of EHDV infection were analyzed using EHDV-PCR, the ID Screen® EHDV Competition and virus neutralization. Genotyping was performed as well. • *Results*: all sampled animals were positive for EHDV RNA and tested positive with both the ID Screen® EHDV Competition and virus neutralization. Genotyping confirmed the presence of **EHDV-8** TUN 2021–like strains.	**Correlation with other techniques**		**Clinical cases**		

7)Behar A. *et al.* (2022). **Insights on Transmission, Spread, and Possible Endemization of Selected Arboviruses in Israel—Interim Results from Five-Year Surveillance**. Veterinary Sciences, 9(2), 65.	• Cattle serum samples were collected monthly in 11 dairy farms between June and December, between 2015 and 2020 (except for 2016). In each selected farm, six heifers were chosen each year to serve as sentinels throughout the sampling season and followed using the ID Screen® EHDV Competition till the end of the sampling.
	• *Results*:
	  ○ all the heifers were serologically negative at the beginning (time 0) of the sampling season
	  ○ 21 of 234 sentinels seroconverted during this study.					

8)Sghaier S. *et al.* (2022). **Epizootic haemorrhagic disease virus serotype 8 in Tunisia, 2021**. Viruses, 15(1), 16.	• Study to characterize a new EHDV strain reported in cattle farms, which rapidly spread throughout Tunisia in 2021. 241 serum samples were screened for the presence of EHDV-specific antibodies using the ID Screen® EHDV Competition ELISA. Those that were positive were tested using serum-neutralization (SN) tests against all referenced EHDV serotypes. • *Results*: 160/241 samples were positive for EHDV antibodies. Among these, 30 samples had sufficient remaining material to also be tested by serum-neutralization. The 30 EHDV-positive sera showed neutralization only for EHDV-6 and EHDV-8 reference isolates but not for the other EHDV serotypes tested. 5/30 samples were positive for EHDV-6-specific antibodies only, and 18/30 were positive for both (EHDV-6, and	**Correlation with other techniques**				

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	EHDV-8). Molecular techniques characterized the causative virus as a member of the EHDV-8 serotype.	
9)Yang H. *et al.* (2020**). Novel serotype of epizootic hemorrhagic disease virus, China**. Emerging Infectious Diseases, 26(12), 3081.	• A new strain of EHDV was isolated in China in 2018 in an epidemiological study led by 10 sentinel cattle free of EHDV-antibodies. Nucleotide sequencing, PCR, neutralization tests, and serology using the ID Screen® EHDV Competition were used to identify this new strain. • *Results*: the ID Screen® EHDV Competition and PCR confirmed EHDV infections in 3 sentinel cattle. Serotype identification of the isolated strain displayed negative results through serotype-specific RT-PCR and virus neutralization tests using serum samples against EHDV-1, EHDV-2, EHDV-5, EHDV-6, EHDV-7, EHDV-8, and non-typed serotype reference strains. **The ID Screen® EHDV Competition is suitable for detecting antibodies from a new EHDV strain.**	Correlation with other techniques

CATTLE AND SMALL RUMINANTS

10)Ishaq M. *et al.* (2025). **Serological evidence of epizootic hemorrhagic disease and serotypes of epizootic hemorrhagic disease virus in Pakistan**. Acta Tropica, 107675.	• 616 sera from apparently healthy ruminants (290 cattle, 80 buffalo, 246 goats) were tested using the ID Screen® EHDV Competition ELISA. Samples that tested positive or doubtful were further tested using virus neutralization test (VNT) against 7 EHDV serotypes (EHDV-1, 2, 4, 5, 6, 7 and 8). • *Results*: ○ overall seroprevalence: 35.9 % ○ seroprevalence in cattle: 66.9 % ○ seroprevalence in buffalo: 21.3 % ○ seroprevalence in goats: 4.1% ○ 220 positive and 20 doubtful samples were tested further using VNT. 169 samples were successfully serotyped. Neutralizing antibodies against at least one of the 7 EHDV serotypes were detected in 75.9 % of ELISA-positive samples and in 10.0 % of the ELISA-doubtful samples. The serotyped samples comprised of 92.3 % from cattle and 7.7 % from buffalo; no samples from goats had neutralizing antibodies against any serotype of EHDV.	Correlation with other techniques

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WILDLIFE

11)Lakatos I. *et al.* (2025). **Cervids as a Promising Pillar of an Integrated Surveillance System for Emerging Infectious Diseases in Hungary: A Pilot Study**. Animals, 15(13), 1948.	• 342 sera from 318 **fallow deer**, 22 **red deer**, and 1 **roe deer** were tested using the ID Screen® EHDV Competition ELISA. • *Results*: all samples were negative.					Specificity data
12)Hidalgo-Hermoso E. *et al*. (2024). **High Exposure to Livestock Pathogens in Southern Pudu (*Pudu puda*) from Chile**. Animals 2024, 14, 526.	• Sera from 26 captive **pudu** and 34 free-ranging pudu were tested using the ID Screen® EHDV Competition ELISA. • *Results*: all samples were negative.					Specificity data

13)Ruiz-Fons F. *et al*. (2024). **Emergence of epizootic hemorrhagic disease in red deer (*Cervus elaphus*), Spain, 2022**. Veterinary Microbiology, 292, 110069.	• Sera from 592 wild ruminants (578 **red deer**, 3 **fallow deer**, 11 **mouflon**) were tested using the ID Screen® EHDV Competition ELISA.
	• *Results*:
	  ○ overall seroprevalence in wild ruminants was 6.3%
	  ○ only red deer tested positive.					

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EXPERIMENTAL STUDIES

14)Spedicato M. *et al*. (2024). **Efficacy of an inactivated EHDV-8 vaccine in preventing viraemia and clinical signs in experimentally infected cattle**. Virus Research, 347, 199416.	• Safety and efficacy of an inactivated vaccine against **EHDV-8** (vEHDV8-IZSAM, from a blood sample of a symptomatic bovine collected during an outbreak in Tunisia in 2021) were evaluated in calves through clinical, serological, and virological monitoring following experimental challenge (the challenge virus was obtained from a naturally infected cattle blood sample collected during the 2022 outbreak in Sardinia, Italy. Blood samples were collected on 0, 7, 14, 21-, 24-, 27- and 31-days post-vaccination (dpv) and tested using the ID Screen® EHDV Competition ELISA and Virus Neutralization test (VNT). • *Results*: ○ All vaccinated animals seroconverted by dpv 27, corresponding to 6 days after booster vaccination, and they remained ELISA-positive throughout the experiment. On the same day (dpv 27), neutralizing antibodies were detected by VNT in 4/6 vaccinated animals, with a low-level titer. The antibody titers either slightly increased or remained stable until the infection. ○ Post-challenge: in vaccinated animals, antibody titers boosted starting 7 days after challenge. In contrast, non-vaccinated control animals developed VP7 antibodies on dpv 45, which corresponds to dpi 10, and remained ELISA-positive throughout the sampling period (dpv 65/dpi 30). Neutralizing antibodies were first detected in 2/4 control calves on dpv 45/dpi 10. Titers increased significantly afterwards. These titers are notably higher compared to the titers observed in vaccinated animals during the same period.	Correlation with other techniques			Experimental vaccination	
15)Spedicato M. *et al*. (2023). **Experimental infection of cattle, sheep, and goats with the newly emerged epizootic hemorrhagic disease virus serotype 8**. Veterinaria Italiana, 59(4).	• Kinetics of **EHDV-8** infection in 6 calves, 7 sheep and 7 goats were followed using the ID Screen® EHDV Competition ELISA and Virus neutralization test (VNT). • *Results*: ○ seroconversion, as determined using the ID Screen® EHDV Competition, was observed in all calves from 9 dpi onwards. ○ all sheep and goats seroconverted by 9 dpi and remained ELISA-positive until the end of the	Correlation with other techniques			Experimental infection	

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	sampling period (dpi 78 and dpi 46 for sheep and goats, respectively). ○ all infected animals developed a neutralizing immune response starting from 9 dpi.					
16)Sailleau C. *et al*. (2019). **Experimental infection of calves with seven serotypes of Epizootic Hemorrhagic Disease virus: production and characterization of reference sera**. Veterinaria Italiana, 55 (4), 339-346.	• 7 serotypes of EHDV (1, 2, 4, 5, 6, 7, and 8) were inoculated in calves (1 serotype per calf). Seroconversion was followed with the ID Screen® EHDV Competition ELISA and another commercially available EHDV competitive ELISA. Sera taken on D31 post infection (pi) were tested and characterized by serum neutralization test (SNT) and virus neutralization test (VNT) for calibration of reference sera. • *Results*: there was a complete agreement between the results obtained with the two ELISAs used: ○ animals inoculated with EHDV-1, EHDV-2, EHDV-6, EHDV-7 and EHDV-8 seroconverted between D10 and D23 post infection. ○ the EHDV-4-infected calf failed to seroconvert. ○ low levels of antibodies were detected between D28 and D31 PI in the animal infected with EHDV-5. ○ the reference sera from the calves inoculated with serotypes 4 or 5 were found negative and doubtful (close to the positivity threshold), respectively when tested with both ELISA kits. The reference sera from EHDV-1, EHDV-2, EHDV-6, EHDV-7, and EHDV-8 were ELISA-positive.	**Correlation with other techniques**			**Experimental infection**	

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