

EXTERNAL REFERENCES

ID SCREEN® AKABANE COMPETITION

Last update: August 2025

Publications / References:

PERFORMANCE EVALUATION

1) Li X. <i>et al.</i> (2019). Comparative evaluation of two commercial ELISA kits for detection of antibodies against Akabane virus in cattle serum. BMC Veterinary Research, 15, 1-6.	- evaluation of the ID Screen® Akabane Competition and another commercial test (IDEXX) using VNT as gold standard. 690 sera from dairy cattle were used to evaluate sensitivity, specificity, and AUC of ROC curve. Results: <u>-VNT:</u> out of the 690 sera tested, 22.17% were positive <u>-ID Screen® AKABANE Competition compared to VNT:</u> - Sensitivity: 93.4% - Specificity: 82.31% - Kappa value between VNT and the ID Screen® Akabane Competition: 0.632 - AUC: 0.932 <u>-Idexx compared to VNT:</u> - Sensitivity: 80.3% - Specificity: 93.48% - Kappa value between VNT and the Idexx Elisa: 0.730 - AUC: 0.915 <i>The IDVET ELISA kit, which was specific for anti-AKAV antibody detection performed slightly better than the IDEXX ELISA kit, an assay able to detect antibodies against many Simbu viruses. The difference of two ELISA kits was perhaps unsurprising: The IDEXX kit is based on the N-protein of Simbu virus and is expected to cross react with other Simbu virus such as Akabane virus (AKAV). The detection capacity of the AKAV using this system may not be as good as an assay using the N-protein of AKAV, like the ID Screen® kit.</i>	Correlation with other techniques
---	---	--

2)Kittelberger R. <i>et al.</i> (2013). Evaluation of two commercial enzyme-linked immunosorbent assay kits for the detection of serum antibodies against Akabane virus in cattle. Journal of Veterinary Diagnostic Investigation, 25(5), 645-648.	• evaluation of the ID Screen® Akabane Competition, another commercial test (Akabane ELISA kit, Chisso Corp., Yokohama, Japan), and VNT using 334 cattle sera from non-infected areas, and 378 sera from naturally infected cattle herds (qualified using VNT). • Results: <u>-Specificity:</u> ○ VNT: 99.4% ○ ID Screen® AKABANE Competition: 99.7% ○ Chisso test: 100% <u>-Sensitivity (with VNT as reference method):</u> ○ ID Screen® AKABANE Competition: 98.9% ○ Chisso test: 78% <i>“The ID Screen® AKABANE Competition presents a typical histogram for a well-performing test method where the infected and noninfected populations are fairly well separated” (sic)</i> <u>-ROC curve:</u> <i>“The ID Screen® AKABANE Competition presents a curve that is typical for a well-performing test method, where the curve climbs rapidly toward the upper left hand corner of the graph. This can be interpreted that the true positive rate is high and the false negative rate is low” (sic)</i> The Chisso test shows a less favorable curve. The slow rise indicates a problem with sensitivity. <i>In view of the higher sensitivity of the ID Screen® Akabane Competition, this ELISA should be the preferred test method. (sic)</i>	Correlation with other techniques
--	---	--

EPIDEMIOLOGICAL STUDIES

CATTLE

3)Kim J. <i>et al.</i> (2024). Laboratory investigation of causes of bovine abortion and stillbirth in the Republic of Korea, 2014–2020. Journal of veterinary diagnostic investigation, 36(3), 428-437.	- Investigation of bovine aborted fetuses : serologic testing using 270 fetal body fluid samples and 205 maternal sera against Akabane was performed using the ID Screen® Akabane Competition. Results: seroprevalence was - in fetal body fluids : 0.7% - in maternal sera : 18.5%.					
4)Davoudi Y. <i>et al.</i> (2024). An outbreak of Akabane disease in a cattle herd on the Mughan plain, Iran. In Veterinary Research Forum (Vol. 15, No. 6, p. 303).	45 sera from adult cows were tested using the ID Screen® Akabane Competition. Results: seroprevalence was 26.66%.					
5)Metwally S. <i>et al.</i> (2023). The First Serological Detection and Risk Factors Analysis of Akabane Virus in Egyptian Cattle. Animals, 13(11), 1849.	366 sera from cattle were tested using the ID Screen® Akabane Competition. Results: seroprevalence was 54.3%.					
6)Yildirim Y. <i>et al.</i> (2015). Molecular and Serological Investigation of Akabane Virus Infection in Cattle in Kars-Turkey. Israel Journal of Veterinary Medicine, 70(3).	- Serological examination of Akabane in herds with and without abortion problems. Sera were collected from 326 cows chosen randomly ; four of these cattle herds had abortion problems (n=138) and 5 cattle herds did not have abortion problems (n=188). Similarly, sera were obtained from 25 bulls in herds with abortion problems and 25 bulls in herds without abortion problems; all the sera were tested using the ID Screen® Akabane Competition. Results: seroprevalence was <u>-at animal-level:</u> - in cows: 2.15% - in bulls: 2% <u>-at herd-level:</u> - in herds with abortion problems: 2.9% - in herds without abortion problems: 1.6%.					

7)Oem J.K. <i>et al.</i> (2014). Serological characteristics of affected cattle during an outbreak of bovine enzootic encephalomyelitis caused by Akabane virus. Tropical animal health and production, 46, 261-263.	- during an outbreak of Akabane virus, 210 cattle sera were tested using a Serum Neutralization Test (SNT) and the ID Screen® Akabane Competition. Results: seroprevalence was - using SNT: 90% - using the ID Screen® AKABANE Competition: 85.2%.	Correlation with other techniques				
8)Elhassan A.M. <i>et al.</i> (2014). A serological survey of Akabane virus infection in cattle in Sudan. International Scholarly Research Notices, 2014(1), 123904.	361 sera from dairy cattle were tested using the ID Screen® Akabane Competition. Results: seroprevalence was 29.4%.					

SMALL RUMINANTS

9)Selim A. <i>et al.</i> (2025). Factors influencing Akabane virus seroprevalence in sheep and goats in Egypt's Nile Delta. Tropical Animal Health and Production, 57(3), 1-7.	- sera from 420 sheep and 400 goats were tested using the ID Screen® Akabane Competition. Results : seroprevalence was - in sheep:11.9% - in goats: 13.8%.					
10)Manavian M. <i>et al.</i> (2023). Seroprevalence and Risk Factors Associated with Akabane Virus Infection in Sheep and Goats in Fars Province, Iran. Archives of Razi Institute, 78(6), 1771.	- sera from 391 sheep and 149 goats were tested using the ID Screen® Akabane Competition. Results: overall seroprevalence was 15.4%.					
11)Hasircioglu S. <i>et al.</i> (2023). Searching Akabane and Pestivirus Infections in Native Breed Sheep with Abortion History. Agricultural Science Digest, 43(6), 852-857.	384 sera from sheep of 1-5 years of age with abortion history were tested using the ID Screen® Akabane Competition. Results: seroprevalence was 3.9%.					

12)Özsoy M. <i>et al.</i> (2021). Seroepidemiology of Akabane Virus Infection in Honamlı Goat Breed. Mehmet Akif Ersoy University Journal of Health Sciences Institute, 9(3), 53-61.	425 goat sera were tested using the ID Screen® Akabane Competition. Results: seroprevalence was 2.12%.						
--	--	--	--	--	--	--	--

CATTLE AND SMALL RUMINANTS

13)Oluwayelu D.O. <i>et al.</i> (2016). Serological investigation of Akabane virus infection in cattle and sheep in Nigeria. Advances in virology, 2016(1), 2936082.	184 cattle sera (from abattoir and farm) and 184 farm sheep sera were tested using the ID Screen® Akabane Competition. Results: seroprevalence was - in abattoir cattle: 73.8% - in farm cattle: 40% - in sheep: 4.3%.						
14)Kojouri G.A. <i>et al.</i> (2015). Serological and molecular detection of Akabane virus in Iran. Iranian Journal of Applied Animal Science 5(3), 737-740.	- blood and uterine swabs samples from 57 female animals (20 cattle, 17 sheep and 20 goats) with a history of still births or abortions (suspected group) and 59 healthy ones (control group) were tested using the ID Screen® Akabane Competition. Results: - among 17 suspected sheep, only 1 was positive - among 20 suspected goats, 3 were inconclusive - no positive or inconclusive cases were found in suspected cattle - overall seroprevalence in the suspected group: 1,75% - no positive or inconclusive cases in the control group.						

ANTELOPES

15)Orynbayev M.B. <i>et al.</i> (2016). Seroprevalence of infectious diseases in saiga antelope (<i>Saiga tatarica tatarica</i>) in Kazakhstan 2012–2014. Preventive veterinary medicine, 127, 100-104.	286 sera from Saiga antelopes were tested using the ID Screen® Akabane Competition. Results: seroprevalence was 13%.					
---	--	--	--	--	--	--

EXPERIMENTAL STUDIES

16)Jeong H. <i>et al.</i> (2017). Experimental infection of goats with a newly isolated strain of Akabane virus that causes encephalomyelitis. Journal of Comparative Pathology, 157(2-3), 220-229.	- Experimental infection on goats using the Akabane virus-7 by various routes: 25 goats were divided into five groups: intracerebral (IC) and intrasubarachnoid (IS) viral inoculation (Group 1 & 2, n= 8 each), intravenous (IV) inoculation (Group 3, n=4), vaccinated before IV inoculation (Group 4, n=4), in addition to a negative control animal (Group 5). A serological survey was performed on serum samples using VNT and the ID Screen® Akabane Competition. Results: <u>-VNT:</u> all the animals were positive at 6 dpi (in the 3 groups: IC, IS, and IV). <u>-ID Screen® Akabane Competition:</u> IC group: 6/8 goats were positive at 6 dpi; all the animals were positive at 10dpi IS group: 7/8 goats seroconverted at 6dpi; all the animals were positive at 8 dpi. IV group: 3/4 goats were positive at 8dpi; all the animals were positive at 10 dpi <u>-positive correlation between VNT and the ID Screen® Akabane Competition in the IC, IS, and IV injection groups.</u> The correlation rates for VNT and the ID Screen® Akabane Competition were 84.6% in the IC group, 90.4% in the IS group, and 84.4% in the IV group.	Correlation with other technique				
17)Lee H. <i>et al.</i> (2016). Experimental infection of cows with newly isolated Akabane virus strain (AKAV-7) causing encephalomyelitis. Veterinary Research, 47, 1-12.	Experimental infection on cows using the Akabane virus-7 by various routes (3 cows/group): intracerebral (IC), intrasubarachnoid space (IS), subcutaneous (SC), and intravenous (IV); a separate group was vaccinated before	Correlation with other				

intravenous infection; serological survey was performed on serum samples using VNT and the ID Screen® AKABANE Competition.

- *Results:*

- VNT :

- IC group: 1 cow was positive at 2 and 6 dpi (and negative afterwards)
 - IS group: at 12 dpi, all cows were positive
 - IV group: all cows were positive at 8 dpi
 - SC group: all cows were positive at 10 dpi.

- ID Screen® AKABANE Competition:

- IC group: 1 cow was positive at 12 dpi
 - IS group: at 12 dpi, all cows were positive
 - IV group: 2 cows were positive at 8 dpi
 - SC group: 1 cow was positive at 6 dpi and all cows was positive from 10 dpi.

Positive correlation between VNT and the ID Screen® AKABANE Competition in the IC, IS, IV and SC injection groups. The correlation rates for VNT and the ID Screen® AKABANE Competition were 80.6% in the IC group, 91.6% in the IS group, 83.3% in the IV group and 95.8% in the SC group.