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Results Of Monitoring Conducted On African Horse Sickness

[1] M.Q. Butaev
[2] Kh.S. Salimov
[3] Sh.A.Djabbarov
[4] A.A. Akbarov
[5] Sh.A. Rakhmatullaev
[6] A. Yusubahmedov
[1] PhD in Veterinary Sciences, Uzbekistan Research Institute of Veterinary Medicine, Uzbekistan
[2] Doctor of Veterinary Sciences, Professor, Uzbekistan Research Institute of Veterinary Medicine, Uzbekistan
[3] Doctor of Veterinary Sciences, Professor, Committee for the Development of Veterinary Medicine and Animal Husbandry of the Republic of Uzbekistan, Uzbekistan
[4] Doctor of Philosophy in Veterinary Sciences, Committee for the Development of Veterinary Medicine and Animal Husbandry of the Republic of Uzbekistan, Uzbekistan
[5] Committee for the Development of Veterinary Medicine and Animal Husbandry of the Republic of Uzbekistan, Uzbekistan
[6] Doctor of Philosophy in Biological Sciences, Mirzo Ulugbek National University of Uzbekistan State Center for Diagnosis of Animal Diseases and Food Safety, Uzbekistan

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Abstract

It is well known that in recent years infectious diseases have not only caused significant damage to the global economy, but in some cases are also considered capable of threatening other sectors (trade, tourism, social sphere). Among such diseases, African horse sickness (AHS) occupies a special place due to its aggressiveness (mortality rate 90–95%). This disease is transmissible and is spread to equids (horses, donkeys, mules, zebras) through blood-sucking insects. In addition, Culicoides species—C. imicola and C. bolitinos—have been identified as the main vectors (biting midges), which requires a comprehensive approach involving epizootologists, virologists, and entomologists. African horse sickness has not been reported in our country, nor in CIS member states, but due to its high risk, the disease deserves special attention.

This article presents data on the global distribution and existing risks of AHS, as well as the results of the first seromonitoring conducted in the country to prevent the disease in equine species.

As a result of the conducted studies, all samples obtained from a total of 2,687 horses and donkeys showed negative results in the ELISA test.

Keywords: African Horse Sickness (AHS), Serological surveillance in equids, ELISA and IFAT diagnostic methods, Culicoides vectors (C. imicola, C. bolitinos), Epidemiological risk and disease spread, AHS-free status (WOAH standards).

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1. Introduction

African horse sickness (AHS) was first detected in 1919 in the Republic of South Africa. The fact that the causative agent of the disease is a virus was first confirmed in 1934 by R. Alexander together with his colleagues. Until 1958, the disease was recorded only in Central Africa; later, in 1965, 1989–1990, and 2007–2010, it spread to the northern countries of the continent. Since 1959, its occurrence has also been observed in the countries of the Near and Middle East. Subsequently, the disease was recorded in Spain in 1966, in Portugal from 1987 to 1991, and in Morocco, Iraq, Algeria, Tunisia, Syria, Turkey, Afghanistan, Pakistan, and India (1, 2, 3, 6, 9). Over the last 5 years, AHS has mainly been reported in Central African countries (Mozambique, Cameroon, Chad, Swaziland, South Africa, Ethiopia) and in Thailand in Asia. In CIS countries, including Uzbekistan, African horse sickness has not been detected to date (7, 8, 9). Although this disease has not been recorded in regions geographically close to us, the expansion of tourism and trade relations requires us to maintain vigilance (8, 9).

Looking at the geographical spread of the disease, it was identified in only one country in 1919, whereas 100 years later it has covered almost the entire African continent. Currently, it has been confirmed in countries around the Mediterranean (Turkey, Pakistan, Syria, Algeria, Iraq), in Southern Europe (Spain, Portugal), and in some regions of Asia. Due to its highly aggressive nature (with a mortality rate of 90–95%), the disease poses a threat to neighboring countries. For this reason, many expert specialists have paid serious attention to the issue, aiming to approach the problem from multiple angles and to seek collaborative solutions.

In addition, AHS is a vector-borne disease, and its main transmitters are biting midges of the Culicoides family — primarily C. imicola and C. bolitinos. This requires a comprehensive approach to the problem (epizootological, virological, and entomological). Considering the biology of these midges: they multiply rapidly in regions with high humidity when air temperatures decrease (7–21°C), and during one generational cycle they are capable of traveling up to 200 km (9). Taking into account current climate variability, this may further exacerbate the situation, giving us additional reason for caution.

The first information about this disease was published in the 2025, No. 2 issue of the “Veterinary Medicine” journal. Based on the analysis of available literature, it described the global distribution, course, clinical signs, pathological changes, and diagnostic methods of African horse sickness.

This article presents, for the first time in our republic, the results of diagnostic seromonitoring of AHS conducted in equine animals using modern methods — specifically, enzyme-linked immunosorbent assay (ELISA) tests.

The diagnostic examinations were carried out directly under the direction of the Veterinary Committee. Initially, 1,800 equids were tested in spring, followed by 887 animals in the autumn stage. Samples were collected from horses and donkeys located in border regions adjacent to neighboring countries (Afghanistan, Tajikistan, Kyrgyzstan, Turkmenistan, Kazakhstan). The purpose of performing the examinations in spring and autumn was based on the fact that, as noted above, Culicoides biting midges reproduce most actively during periods of high humidity and decreasing temperatures.

Diagnostic tests were performed using the ELISA test recommended and approved by the World Organisation for Animal Health (WOAH) for the detection and recognition of AHS.

The objectives of conducting diagnostic examinations for AHS were, first, to reaffirm that the disease has historically never been recorded in our republic, and second, to obtain AHS-free status issued by the World Organisation for Animal Health through these results and through the preventive measures implemented by the national veterinary service.

To improve the reliability of the diagnostic results, during the spring season, sera were tested using two different diagnostic kits. By comparing the obtained results, the accuracy of the kits and the correctness of the testing process were verified.

The results of the examinations and analyses conducted during the first stage (spring), by regions, are presented in Table 1.

Seromonitoring results for African horse sickness as of May 8, 2025

Table 1.

№	Region				IFA result

		Samples collected from horses	Samples collected from donkeys		Gold Standard Diagnostics (Spain)	IDVet (France)	**IFA result**
1	Republic of Karakalpakstan	126	56	**182**	7,23%	9,03%	**negative**
2	Andijan	35	7	**42**	8,02%	8,15%	**negative**
3	Bukhara	49	48	**97**	7,01%	8,08%	**negative**
4	Jizzakh	97	75	**172**	11,21%	12,04%	**negative**
5	Kashkadarya	177	95	**272**	9,18%	11,12%	**negative**
6	Navoi	84	18	**102**	7,56%	10,56%	**negative**
7	Namangan	40	27	**67**	8,42%	11,31%	**negative**
8	Samarkand	106	25	**131**	10,08%	12,09%	**negative**
9	Surkhandarya	91	29	**120**	12,12%	13,01%	**negative**
10	Syrdarya	69	33	**102**	7,61%	10,24%	**negative**
11	Tashkent	225	55	**280**	9,08%	14,51%	**negative**
12	Fergana	62	10	**72**	6,56%	10,12%	**negative**
13	Khorezm	35	32	**67**	7,53%	12,06%	**negative**
14	Tashkent city	94	-	**94**	9,67%	15,13%	**negative**
Жами		**1290**	**510**	**1800**	**8,78%**	**11,46%**	**negative**

Results Recording Table

Gold Standard Diagnostics (Испания)		**IDVET (Франция)**	
Result	**Conclusion**	**Result**	**Conclusion**
ОЗ ≤ 45%	негатив	ОЗ ≤ 50%	negative
45% < ОЗ ≤ 50%	гумон	50% < ОЗ ≤ 60%	doubtful
ОЗ ≥ 50%	позитив	ОЗ ≥ 60%	positive

Note: The tests were carried out at the Republican Diagnostic Center using kits from GOLD STANDARD DIAGNOSTICS (Spain) and IDVUE (France), with the ELISA device (Biotek EL-808) and calibrated pipettes. The Diagnostic Center is accredited according to ISO 17025-201-9 standards for ELISA and PCR.

From the table presented, it can be seen that in spring, a total of 1,800 equines were tested, of which 1,210 were horses and 510 were donkeys. According to the test results, the average indicator in the enzyme-linked immunosorbent assay (ELISA) based on titers was 8.78% (Spanish kit) and 11.46% (French kit). Both kits (GOLD STANDARD DIAGNOSTICS ОЗ ≤ 45% –

negative and IDVET O3 ≤ 50% – negative) confirmed each other, showing negative ELISA results in all 1,800 samples.

In the second phase, during the autumn season, a total of 887 equines were tested, of which 572 were horses and 315 were donkeys. The ELISA test results and conclusions by region are presented in Table 2.

"Seromonitoring Results of African Horse Sickness in the IFAT Test as of 15 October 2025"
Table 2.

№	Region	"Samples collected from horses"	"Samples collected from donkeys"	"Total Samples Tested — IFAT Results"	"IFAT results"	
					"IDVet (France) kit"	"IFAT conclusion"
1	Karakalpakstan Rep	30	35	**65**	15.12%	**negative**
2	Andijan	20	20	**40**	17.83%	**negative**
3	Bukhara	24	21	**45**	5.27%	**negative**
4	Jizzakh	40	20	**60**	9.22%	**negative**
5	Kashkadarya	40	55	**95**	5.16%	**negative**
6	Navoi	32	18	**50**	8.12%	**negative**
7	Namangan	20	22	**42**	8.02%	**negative**
8	Samarkand	69	11	**80**	12.10%	**negative**
9	Surkhandarya	62	33	**95**	6.46%	**negative**
10	Syrdarya	70	-	**70**	7.23%	**negative**
11	Tashkent Region.	74	36	**110**	6.53%	**negative**
12	Fergana	53	17	**70**	9.49%	**negative**
13	Khorezm	28	27	**55**	6.15%	**negative**
Total		**572**	**315**	**887**	**8.98 %**	**negative**

Note: All examinations were carried out at the Republican Diagnostic Center. The Center is accredited according to ISO 17025-2019 for IFAT and PCR standards. The IFAT test was conducted using IDVet (France) kits. The IFAT procedure was performed using a Biotek EL-808 device and calibrated pipettes. According to validation, the test demonstrated a Sensitivity of 98.6% and a Specificity of 99.3%.

According to the results of the immunoenzyme (ELISA/IFAT) test, all 887 samples showed negative results, with an average indicator of 8.98% (IDVet (France) kit, OD ≤ 50% – negative).

Thus, the results of the spring and autumn monitoring of African horse sickness in horses across the Republic show that a total of 2,687 samples collected from horses and donkeys demonstrated negative results in the immunoenzyme assay.

2. Conclusion

For the first time, based on the seromonitoring results (IFAT), it has once again been confirmed that African horse sickness has never been historically registered in our Republic. Based on these findings, as well as the long-term measures implemented by the Committee for Veterinary and Livestock Development to prevent the introduction of African horse sickness into our country,

conditions have been created to obtain disease-free status.

All the necessary documentation regarding the completed measures was prepared in cooperation with scientists by the Committee and submitted to the World Organisation for Animal Health for approval.

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