Web of Discoveries: Journal of Analysis and Inventions
webofjournals.com/index.php/3

EPIZOOTIC ANALYSIS OF BRUCELLOSIS IN THE REGIONS OF FERGANA PROVINCE

Kokilov B. R.
PhD Student

Abstract
The scientific research was aimed at analyzing the epizootic situation of brucellosis in certain farms of the Fergana province.
The studies were conducted in the farms "Baxt Imkon Rivoji" of Oltinko'l district and "Muqumiy" of Andijan district in Andijan region, as well as "Zotdor Chorva Davri" of Kuva district and "Khamzayev Bekzod Chorvasi" of Furqat district in Fergana region. A total of 234 blood samples were collected from 3,650 cattle. In the Rose Bengal test, 32 blood samples tested positive, while 202 samples tested negative. When the 32 Rose Bengal positive samples were reexamined using the agglutination reaction (AR), all 32 samples showed negative results.

Keywords: brucellosis, cattle, farm, region, district, reaction, positive, negative, livestock, disease.

Introduction

Relevance of the Topic

According to the results of the IFT test conducted between 2010–2019, the prevalence of brucellosis in cattle ranged from 0.2% to 43.8%, while in sheep and goats it ranged from 0.01% to 20.0% [6]. Based on data from 2010–2016, brucellosis accounted for 5% of zoonotic diseases in Asian regions. The prevalence in cattle (according to the studies considered) ranged from 0.2% to 43.8%, while in sheep and goats it reached up to 20%.
Today, the issue of stabilizing epizootic well-being among agricultural animals has become urgent for the government in ensuring sufficient supply of meat, milk, and other livestock products, as well as food safety for the population. Therefore, in recent years, significant measures have been adopted and implemented to further develop animal husbandry, including economic reforms, the establishment of dehqon (farmer) farms, private subsidiary, and privatized livestock farms, and these activities are being continued [5,7].

Materials and Methods

The research was conducted in the following livestock farms:
"Baxt Imkon Rivoji" farm, Oltinko'l district, Andijan region – 2,000 head of Holstein Friesian, Simmental, and Swedish breed cattle. "Muqumiy" farm, Andijan district, Andijan region – 350 head of Holstein Friesian breed cattle. "Zotdor Chorva Davri" farm, Quva district, Fergana region – 500 head of Holstein Friesian and Simmental breed cattle. "Xamzaev Bekzod Chorvasi" farm, Furqat district, Fergana region – 800 head of Holstein Friesian cattle.

The blood sera of cattle were tested using the Rose Bengal Plate Test (RBT) and Agglutination Reaction (AR). In these tests, antigens of *Brucella abortus* stained with Rose Bengal dye were reacted with antibodies in the blood sera. If antibodies against *Brucella* were present, agglutination (visible clumping) occurred.

Procedure of the Rose Bengal Test (RBT)

1. 30 µl of blood serum is placed onto a glass plate.
2. 30 µl of Rose Bengal antigen is added.
3. The two liquids are mixed (using a pipette).
4. The plate is rotated manually for 4 minutes.
5. The result is observed:
   - Positive: if visible agglutination (clumping) is observed.
   - Negative: if the mixture remains uniform without agglutination.

Agglutination Reaction (AR)

The Agglutination Reaction (AR) is an immunological reaction in which antigens and antibodies (immunocompetent substances) interact, leading to clumping of cells or particles and the formation of a precipitate.

Procedure:

1. Blood serum samples are serially diluted (1:50, 1:100, 1:200, 1:400).
2. For each serum sample, 5 test tubes are used. In the first row, primary dilutions are prepared, and the tubes are placed in a rack and numbered.
3. 2.4 ml of 0.85% phenolized sodium chloride solution is added to the tubes of the first row. Tubes 3–5 receive 0.5 ml of the same solution.
4. 0.1 ml of serum is added to the first tube and mixed. Then 0.5 ml is transferred sequentially from tube to tube up to the 5th.
5. Antigen (prepared at 1:10 dilution) is added to tubes 2–5.
6. Standard controls are prepared with antigen dilutions of 1:10.
7. The tubes are shaken, and 0.5 ml is transferred into serological tubes, followed by addition of 0.5 ml saline.
8. Control AR is set with healthy sheep serum and diseased sheep serum.
9. All tubes are incubated in a thermostat at 37–38 °C for 16–20 hours.
10. The degree of agglutination is evaluated after 18–24 hours.

Interpretation:

A titer of ≥1:200 in animals is considered positive [1,2,3,4,7].

Research Results:

During testing of blood serum samples collected from livestock in the studied farms: Out of 234 samples, 32 were positive in the Rose Bengal Test (RBT). However, in the Agglutination Reaction (AR), all of these 32 samples showed negative results. The remaining 202 samples were negative in both RBT and AR. These results are presented in Tables 1 and 2.

1-jadval

"Results of the Rose Bengal Test in the diagnosis of animal brucellosis"

T/R	Name of region, district, and farm	Number of cattle in the farm	Number of blood serum samples	Test results	
				Positive	Negative
1	Andijan region, Oltinko'l district, "Baxt Imkon Rivoji" farm	2000	97	11	86
2	Andijan region, Andijan district, "Muqimiy" farm	350	36	7	29
3	Fergana region, Quva district, "Zotdor Chorva Davri" farm	500	45	9	36
4	Fergana region, Furqat district, "Hamzaev Bekzod Chorvasi" farm	800	56	5	51
	Total	**3650**	**234**	**32**	**202**

According to the analysis of the results in Table 1, a total of 2,000 head of cattle from the "Baxt Imkon Rivoji" farm in Oltinko'l district of Andijan region, 350 head from the "Muqumiy" farm in Andijan district of the same region, 500 head from the "Zotdor Chorva Davri" farm in Quva district of Fergana region, and 800 head from the "Khamzaev Bekzod Chorvasi" farm in Furqat district of the same region – making up a total of 3,650 head of cattle – were tested. Out of the 234 blood serum samples collected, the Rose Bengal Test revealed 32 positive and 202 negative results.

Table 2. "Results of the Agglutination Reaction (AR) in the diagnosis of animal brucellosis"

T/R	Name of region, district, and farm	Number of cattle in the farm	Number of blood serum samples	Number of RBT-positive blood samples	AR test results	
					Positive	Negative
1	Andijan region, Oltinko'l district, "Baxt Imkon Rivoji" farm	2000	97	11	0	11
2	Andijan region, Andijan district, "Muqimiy" farm	350	36	7	0	7
3	Fergana region, Quva district, "Zotdor Chorva Davri" farm	500	45	9	0	9
4	Fergana region, Furqat district, "Hamzaev Bekzod Chorvasi" farm	800	56	5	0	5
	Total	**3650**	**234**	**32**	**0**	**32**

According to the analysis of the results of Table 2, among the blood samples that had previously shown 32 positive cases in the Rose Bengal Test, all 32 blood samples gave negative results when tested with the Agglutination Reaction (AR).

Conclusion

1. From a total of 3,650 head of cattle belonging to the “Baxt Imkon Rivoji” and “Muqumiy” farms in Andijan region, the “Zotdor Chorva Davri” farm in Quva district of Fergana region, and the “Khamzaev Bekzod Chorvasi” farm in Furqat district of the same region, 234 blood serum samples were collected. The Rose Bengal Test revealed 32 positive and 202 negative results.
2. Among the 32 blood samples that tested positive in the Rose Bengal Test, all 32 samples were found to be negative when examined with the Agglutination Reaction (AR).
3. Based on the results of the Rose Bengal Test, when analyzing the epizootic situation in 2 regions and 4 farms, the proportion of positive cases was 32 samples, which corresponds to 0.03%.
4. When the 32 blood samples that had tested positive in the Rose Bengal Test were re-examined by the Agglutination Reaction (AR), no positive cases of brucellosis were detected across the 2 regions and 4 farms, confirming that the farms were 100% brucellosis-free.

References

1. Gizzatullina G.I. va boshqalar — “Mikrobiologiya, virusologiya va immunologiya” Moskva, “GEOTAR-Media”, 2015 B: 256–260 (Brusellyoz uchun serologik testlar, Wright va Rose-Bengal) ISBN: 978-5-9704-3260-6
2. Zufarov Q.Q., Shukurov M.I. va boshqalar — “Veterinariya infektsion kasalliklari” Toshkent, 2019 Б: 225–234
3. Левин Ю.И., Шкляров А.М. — “Инфекционные болезни” (учебник для мед. вузов) Москва, “Медицина”, 2014 Б: 327–334 (Brucella spp. infeksiyasi, RBT, Wright, Koombs test) ISBN: 978-5-225-04276-9
4. Shukurov M.I. — “Veterinariyada laboratoriya diagnostikasi”: Toshkent, “O‘qituvchi”, 2018.B: 143–150
5. Schmidt J. Bakterienne F. Familie Bacteriaceae In: Naturhistorisk Grundlag for det Bakteriologiske Studium// Morten Porsild, København,1901.- P. 248-296.
6. PMC+6Taylor & Francis Online+6ResearchGate+6.
7. https://www.fao.org/news./detail-news/en/c/1709996/.