В кормах наибольшую опасность имеют следующие контаминанты: токсины микроорганизмов (в том числе грибов), токсичные элементы (тяжелые элементы), антибиотики, пестициды, нитраты, нитриты, диоксины и диоксиноподобные соединения, радионуклеиды.

По экологической ситуации, Карагандинская область является одной из экологический неблагополучных территорий нашей страны. Это связано с большой концентрацией черной и цветной металлургии, энергетических комплексов и других промышленных обьектов, таких как «АрселорМиттал Темиртау» и «Казахмыс».

Из атмосферы ядовитые вещества попадают на почву и проникают в нее непосредственно или с осадками.

Поэтому изучение влияния факторов окружающей среды на кормов в условиях Карагандинской области имеет большое практическое и теоретическое значение.

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MONITORING OF THE EPIZOOTIC SITUATION ON ANIMAL BRUCELLOSIS IN THE REPUBLIC OF KAZAKHSTAN

ANNOTATION

Brucellosis is a particularly dangerous zoonotic disease that is widespread in animals and humans. Despite the fact that more than 120 years have passed since the discovery of the pathogen and the disease has been well studied by domestic and foreign researchers, the problem of brucellosis remains relevant in many countries of the world. A number of economically developed countries have achieved some success in controlling bovine brucellosis caused by Brucella abortus. Results for control of brucellosis in small ruminants caused by Brucella melitensis are more modest. In some developing countries, the epizootic situation for bovine brucellosis is worsening. Brucellosis caused by B. melitensis is also a major public health problem.

According to the World Health Organization (WHO), more than 500 000 cases of newly diagnosed brucellosis are reported each year in more than 170 countries, more than half of them in the Eastern Mediterranean and Middle East. In brucellosis-prone regions, the actual incidence can be 10 to 25 times higher than officially reported. In brucellosis-endemic areas, where brucellosis is a deep-rooted problem, the infection has global, far-reaching negative consequences for the health and

economy of states. The main objective of the studies was to monitor the epizootological situation of animal brucellosis in the Republic of Kazakhstan (RK).

Key words: *epizootological monitoring, epizootological situation, brucellosis, infection, cattle, diagnostics.*

Introduction. According to the modern classification of microorganisms, Brucella belong to the Bacteria domain, the Proteobacteria phylum, the Alphaproteobacteria class, the Rhizobiales order, the Brucellaceae family, and the Brucella genus [4]. The genus Brucella consists of 12 independent species differing in genetic, biochemical, antigenic and virulent characteristics: B. melitensis is represented by 3 biovars, the main host is small cattle (goats and sheep) ; B. abortus - 7 biovars, the main host is cattle; B. suis is represented by 5 biovars, the carriers are pigs (1, 2, 3 biovars), hares - 2 biovars, reindeer - 4 biovars, mouse-like rodents - 5 biovars; B. neotomae (desert bush rats); B. ovis (sheep); B. canis (dogs); B. ceti (cetaceans); B. pinnipedialis (pinnipeds); B. microti (grey vole); B. inopinata (primary host not established); B. papionis (baboons Papio spp.); B. vulpis (common red fox Vulpes vulpes) [5]. Some domesticated and free-living wild animals can be "accidental" hosts of epidemiologically significant species of Brucella [6]. The causative agent of brucellosis has a common, typical for non-spore-forming bacteria, resistance to environmental factors, and is able to persist for a long time in various substrates [7]. In a humid environment at a temperature of 55 ° C, the brucellosis pathogen dies after 60 minutes, at 60 ° C - after 30 minutes, at 70 ° C - after 10 minutes, and when boiled - instantly. Dry heat (90-95°C) kills brucella within an hour. Under the action of sunlight, brucella die within a period of several minutes to 7-8 days, depending on the intensity of insolation, atmospheric conditions, etc. [8].

Differential properties of Brucella species. Determination of species and biovars of Brucella in specific territories and in the foci of infection is of great epidemiological importance in terms of classifying foci, assessing the state of the epizootic process, and establishing the facts of migration of Brucella from one animal species to another [9]. To differentiate Brucella, the ("gold standard") is investigated: - the need for Brucella in an increased content of carbon dioxide (CO_2) in the growth medium; - the ability to form hydrogen sulfide (H_2S); - reducing activity in relation to dyes (thionine, basic fuchsin); - the ability to agglutinate with monospecific brucellosis sera (anti-abortus, anti-melitensis); - sensitivity to brucellosis diagnostic bacteriophage Tb, as well as Wb, Fi, Bk2 [10]. The need of Brucella for increased content of carbon dioxide (CO_2) in the growth medium. Brucella cultures of the B. suis and B. melitensis species grow under aerobic conditions, while the first generations of B.abortus and B. ovis cultures can be isolated only in the presence of an increased carbon dioxide content (5-10%) [11]. During subsequent reseedings, B. abortus cultures lose their need for an increased content of carbon dioxide in the cultivation atmosphere and grow under normal conditions. 33 The ability to form hydrogen sulfide (H_2S). Brucella species B. suis (biovar 1) have the most pronounced ability to form hydrogen sulfide, and B.abortus (biovars 1-4, 9), B. inopinata and B. neotomae, to a lesser extent. [12]. Individual strains of B.abortus (biovar 6) are capable of producing H_2S. Cultures of B. melitensis, B. abortus (biovar 5), B. ovis, B. canis, B. pinnipedialis, B. ceti, B. form. Reducing activity against dyes. Cultures of B. abortus 1 biovar grow on media with fuchsin, but there is no growth on media with thionin. Cultures of B. suis 1 biovar grow on media with thionin in the absence of growth on media with fuchsin. Cultures of the species B. melitensis grow on media containing both dyes. Agglutination with monospecific (A-, M-, R-) sera. Agglutination of Brucella cultures with monospecific anti-melitensis (M), anti-abortus (A) sera depends on their biovar [13]. For cultures of Brucella species B.ovis and B. canis, as well as cultures of other species and biovars of Brucella in the R-form, monospecific anti-R serum is used for the agglutination reaction. Sensitivity to brucellosis diagnostic bacteriophage Tb, as well as Wb, Fi, Bk2. Brucella species B.abortus are lysed by all four bacteriophages; B.melitensis is only bacteriophage Bk2; B.suis - Bk2 and Wb; B.pinnipedialis and B. ceti - Wb, Fi, Bk2; bacteriophage Fi lyses cultures of B. abortus, B. neotomae, and partially B. suis. Cultures of B. ovis and B. canis are not lysed by phages. The main differential properties of species and biovars of bacteria of the genus Brucella spp. are presented in the Table 1.

Table 1 – Differential properties species And biovars bacteria kind *Brucella*

Brucella species	biovars	Reference strains	CO2 requirement	Products H2S	Growth on media containing		Agglutination with monospecific sera			Lysis by phages in DRT				Main hosts
					T	F	A	M	**R**	Tb	**Wb**	**Fi**	**Bk2**	
B. melitensis	**1**	16-M	-	-	+	+	-	+	-	-	(-)	-	+	Sheep, goats
	2	**63/9**	-	-	+	+	+	-	-	-	(-)	-	+	
	3	**Ether**	-	-	+	+	+	+	-	-	(-)	-	+	
B. abortus	**1**	**544**	(+)	+	-	+	+	-	-	+	+	+	+	cattle
	2	**86/8/59**	(+)	+	-	-	+	-	-	+	+	+	+	
	3	**Tulya**	(+)	+	+	+	+	-	-	+	+	+	+	
	4	**292**	(+)	+	-	(+)	-	+	-	+	+	+	+	
	5	B-3196	-	-	+	+	-	+	-	+	+	+	+	
	6	**870**	-	(+)	+	+	+	-	-	+	+	+	+	
	9	C-68	-	+	+	+	-	+	-	+	+	+	+	
B. suis	**1**	**1330**	-	+	+	(-)	+	-	-	-	+	+	±	pigs
	2	**Thomsen**	-	-	+	-	+	-	-	-	+	+	±	Pigs, rabbits
	3	**686**	-	-	+	+	+	-	-	-	+	+	±	pigs
	4	**40**	-	-	+	(-)	+	+	-	-	+	+	±	reindeer
	5	**513**	-	-	+	-	-	+	-	-	+	+	±	mouse rodents
B. neotomae		**5K33**	-	+	-	-	+	-	-	±	+	+	+	bush rats
B. ovis		**63/290**	+	-	+	(-)	-	-	+	-	-	-	-	sheep
B. canis		**RM 6/66**	-	-	+	-	-	-	+	-	-	-	-	dogs
B.pinnipedialis		indefined	+	-	+	+	+	±	-	(-)	(+)	+	+	pinnipeds
B. ceti		indefined	-	-	+	+	+	±	-	(-)	(+)	+	+	cetaceans
B. microti		indefined	-	-	+	+	-	+	-	-	+	X	X	***gray vole***
B. inopinata		indefined	-	+	+	+	-	+	-	P	X	X	X	Not installed

+ - the trait is determined in all representatives, (-) - most cultures do not have this trait,
– – the trait is absent in all representatives, P – incomplete lysis by Tb phage at 104xRTD (Scholz et al, 2010) or
± – the trait is detected in some strains that are not sensitive (+) - most crops have this feature, X - no information.
to the Tb phage (De et al, 2008)

Materials and research methods. In the Republic of Kazakhstan (RK), one of the economically and socially significant diseases widespread in the country is brucellosis, which occupies a dominant place in the general infectious pathology of animals. This disease causes not only significant economic damage to animal husbandry, but also has great social significance, since it is not uncommon for a person to get sick [15]. The epizootic situation for brucellosis was studied by comparing the official data provided by the Ministry of Agriculture of the Republic of Kazakhstan and the results of their own diagnostic studies of animals obtained as a result of visiting farms of the republic that are unfavorable for brucellosis. [16]. In the course of the studies, extensive indicators of the epizootic process in animal brucellosis were also studied, such as the prevalence of brucellosis infection in the territorial units of the Republic of Kazakhstan and their susceptibility to brucellosis. In table. 3 shows information on the number of brucellosis-affected rural districts (RD) and epizootological units (EU) in 14 regions of the Republic of Kazakhstan in 2019 [17].

Research results. Studies were carried out to study the epizootic situation of bovine brucellosis in 14 regions of the Republic of Kazakhstan. Table 2 shows the number of cattle (cattle), small cattle, camels, pigs, horses and dogs in the context of districts, rural districts (RD), settlements and each epizootological unit (EU) (Farms, LLP , IE, etc.) in the regions of the Republic of Kazakhstan in 2019. As can be seen from Table 2, there are 2383 rural districts in the Republic of Kazakhstan, of which the largest number is in the Almaty region (255 RD), the smallest indicator is Atyrau region (70 RD).

Table 3 show that out of the total number of RD available (2383), positively reacting animals were isolated in 1513, which is 63.4%. The largest number of RD affected by brucellosis was noted in East Kazakhstan region, where out of 152 RD, positively reacting animals were isolated in 140, which is 92.1%. A similar situation with the widespread spread of brucellosis infection among RD was noted in Zhambyl region (87.5%), as well as in Atyrau (87.1%), Aktobe (80.8%), Pavlodar (77%), East Kazakhstan region (73.1%) and Karaganda (72.4%) areas.

Among 31929 EU, registered on the territory of the Republic of Kazakhstan, positively reacting animals were identified in 5360 of them, which is equal to 16.7%. Among the EU of 14 regions of the Republic of Kazakhstan, most of them are affected by brucellosis in Aktobe (55.5%), Akmola (36.4%), Atyrau (26.6%), Zhambyl (22.7%) regions, West Kazakhstan region (22.8%) and East Kazakhstan region (26.46%). These data are qualitative indicators indicating a wide area of territorial distribution of brucellosis infection in the regions of the Republic of Kazakhstan.

In total, in 2019, 8503,387 heads of cattle (cattle) were examined in the republic, of which 36,755 cattle (0.4%) were registered with brucellosis, 2,0109,557 small ruminants (sheep) were examined, 10,444 positively responding (0.05%), pigs 189,344 examined of them 9 positively reacting heads (0.004%), horses 44001 of them 3 positively reacting (0.006%), camels 164650 of them 124 positively reacting (0.07%) and 58940 dogs of them 145 positively reacting (0.2%).

From data table 3 it follows that the largest number of cattle with brucellosis was found in East Kazakhstan (11112 heads), West Kazakhstan (7481 heads), Pavlodar (3469 heads) and Karaganda (4453 heads) regions. The lowest quantitative indicator of animals reacting to brucellosis was positively noted in Zhambyl (414 heads) and Kyzylorda (96 heads) regions.

An analysis of the epizootic situation on a regional scale shows that only the Mangistau region is clean, Kyzylorda, Zhambyl, Turkestan, North Kazakhstan regions belong to class "A" (zone of low infection rate) in terms of the incidence of brucellosis in cattle. The class "B" (zone of medium degree of infection) includes - Kostanay, Atyrau, Akmola, Almaty. All other areas have the status of class "C" (a zone of high degree of infection).

Table 2 – The number of cattle, small cattle, camels, pigs, horses and dogs in the context of districts, rural districts, townships and each EU (Farms, LLP, IU, etc.) in the regions of the Republic of Kazakhstan in 2019.

No.	Name regions	Number of rural districts	The number of EU in them	Number of animals (unit of heads)					
				cattle	small cattle	pigs	horses	camels	dogs
1	Akmola	222	1405	399236	510251	97276	159865	125	48447
2	Atyrau	70	379	223627	733114	106	500	23310	17400
3	Kostanay	242	1208	412042	406730	136807	119977	241	56384
4	Mangystauskaya	4 6	268	22333	427066	45	80974	68563	5165
5	Zhambylskaya	160	2390	429620	2953913	14450	123511	6392	88821
6	Almaty	255	5485	1017344	3489479	8472	129507	239836	115355
7	Kyzylorda	147	1822	327153	627590	2764	149051	47766	32054
8	Turkestan	184	2710	993858	4009315	6281	317755	31990	155489
9	IN TO	245	2489	1004449	1611596	76897	334535	511	73341
10	Pavlodar	126	2287	396858	475205	69400	153933	67	16855
11	Aktyubinskaya	132	2489	485747	1 019 541	53543	135526	13764	24708
12	Karaganda	207	4134	567594	969332	75889	314155	1446	19259
13	WKO	152	3512	621647	1223583	17734	179821	1921	32321
14	SKO	195	1351	353747	439761	123948	131213	17	46487
	Total for Kazakhstan	**2383**	**31929**	**7255255**	**19916017**	**683612**	**2330323**	**435949**	**732086**

Note: LLP - a limited liability partnership, IE - an individual entrepreneur.

Table 3 – Infection rates of animals and brucellosis in EE and RD by regions in 2019

No.	Name of areas	Number of rural districts	In how many of them positively reacting animals were identified, absolute Number, %	Qty EU (Farm, LLP, IE, etc.)	In how many of them positively reacting animals were identified, absolute Number, %	cattle		MRS		Pigs		Horses		camels		dogs	
						Total heads explored	Heads responding positively, absolute number/%	Total heads explored	Heads responding positively, absolute number/%	Total heads explored	Heads responding positively, absolute number/%	Total heads explored	Heads responding positively, absolute number/%	Total heads explored	Heads responding positively, absolute number/%	Total heads explored	Heads responding positively, absolute number/%
1	Akmola	222	126/56.7	1405	512/36.4	483000	1186 /0, 2	5 92370	243 /0, 04	45365	0	1 594	0	97	0	625	6/ 0.9
2	Atyrau	70	61/87,1	379	101/26.6	223627	1241/0.5	733114	1755/0.24	106	0	496	0	23310	98/0.42	174	0
3	Kostanay	242	136/56.1	1208	190/15.7	471998	1936/0.4	438897	70/0.01	40045	0	596	0	213	0	810	0
4	Mangistau	4 6		268		15885		311894	0	66	0	195	0	47047	0	0	0
5	Zhambyl	160	140/87.5	2390	543/22,7	516412	414/0.1	3041401	1096/0.1	6038	0	1027	0	4373	0	5315	10/0.2
6	Almaty	255	149 / 57,3	5485	284/5,5	1136101	1128/0.09	3339254	2246/0.06	3194	0	19183	0	19610	0	15827	31/1,8
7	Kyzylorda	147	38/25.8	1822	59/3,2	418689	96/0.02	755265	176/0.02	829	0	826	0	42101	0	970	0
8	Turkestan	184	128/69.6	2710	144/5.31	1145367	491/0.04	4316355	722/0.02	3281	0	1628	2/0.1	17044	4//0.02	3617	2/0.06
9	East Kazakhstan	245	179/73, 1	2489	652/26.46	1 237142	11112/0.88	1856 900	1841/0.11	3082	9/ 0.3	12353	0	403	8/1.99	23399	682/2.9
10	Pavlodar	126	98/77	2287	297/12.9	498720	3469/0.7	591030	53/0.01	29370	0	733	0	88	0	1041	14/1.3
11	Aktobe	132	118/80.8	2489	1383/55.5	542837	3136/0.6	1027821	723/0.07	5068	0/0	710	0/0	7126	12/0.17	653	18/2,7
12	Karaganda	207	150/72.4	4134	357/8,6	684091	4453/0.6	1133192	98/0.008	11395	0	3029	0	1361	0	4973	14/0.2
13	West Kazakstan	152	140/92.1	3512	801/22,8	703509	7481/1.06	1451631	1403/0.09	8177	0	895	1/0.1	in 1874	2/0.1	992	43/4,3
14	North Kazakhstan	195	50/25.6	1351	37/2,7	426009	612/0.14	520433	18/0.003	33328	0	736	0	3	0	544	1/0.18
	TOTAL	**2383**	**1513/63.4**	**31929**	**5360/16.7**	**8503387**	**36755/0.4**	**20109557**	**10444/0.05**	**189344**	**0.004**	**44001**	**0.006**	**164650**	**124/0.07**	**58940**	**145/0.2**

Table 4 – Results of diagnostic studies of cattle for brucellosis in the Republic of Kazakhstan for 2016-2018

Names regions	2016			2017			2018		
	research	react.	% react.	research	react.	% react.	research	react.	% react.
Akmola	513 558	2 829	0.6	488 309	1 834	0.4	454 041	2 066	0.5
Aktobe	544 275	2 932	0.5	515 035	3 392	0.7	505 701	2 595	0.5
Almaty	1 174 988	1 134	0.1	1076 200	1 373	0.1	1090 788	1 201	0.1
Atyraus	253 315	669	0.3	203 866	680	0.4	180 944	835	0.5
East Kazakhstan	1 117 141	6 000	0.5	1191 451	9 814	0.8	1104 901	8 403	0.8
Zhambyl	436 554	364	0.1	350 266	355	0.1	382 529	342	0.1
West Kazakstan	673 375	7 232	1.1	632 121	7 904	1.3	600 443	7 703	1.3
Karaganda	660 076	2 968	0.4	584 309	3 774	0.6	570 223	3 869	0.7
Kyzylordia	359 008	37	0.0	344 990	75	-	345 558	57	-
Kostanay	609 698	4 513	0.7	504 051	3 431	0.7	469 956	3 195	0.7
Mangistau	23 541	-	-	19 202	2	-	19 029	-	-
Pavlodar	522 226	3 950	0.8	470 989	5 046	1.1	420 581	2 557	1.2
North Kazakhstan	453 142	1 043	0.2	434 206	745	0.2	387 565	615	0.3
Turkestan	1 091 106	633	0.1	1040 713	583	0.1	1065 696	356	0.1
Total By RK	8 432 277	34 306	0.4	7855 708	39072	0.5	7597 955	34 790	0.5

According to the data from Table 4 - Analysis of the results of diagnostic studies showed that in recent years (2016-2018) the highest number of positively responding individuals among Cattle were observed in the West Kazakhstan region (WKO). So, in 2016, 1.1% was found, in 2017 and 2018. 1.3% of animals reacted equally to brucellosis.

Persistent trouble for brucellosis of cattle in recent years has been observed in Pavlodar and Kostanay regions. In Pavlodar region, the incidence rate in 2016 was 0.8%; in 2017 - 1.1%; in 2018 - 1.2%, and in 2019 it decreased to 0.7%. In the Kostanay region, the relative incidence of brucellosis in cattle was stably 0.7% in 2016-2018, and in 2019 the incidence rate significantly decreased to 0.4%. A fairly high number of animals infected with brucellosis among cattle from 2016 to 2019. it was also noted in the East Kazakhstan Region (EKR), and in increasing dynamics, which amounted to 0.5; 0.8; 0.8 and 0.9%, respectively.

Persistent well-being for bovine brucellosis is observed in the Mangistau region, where for a number of years no positively reacting animals have been identified. Isolated cases of reacting cattle were noted in the Turkestan and Zhambyl regions, in which, according to the results of annual diagnostic routine studies, the incidence rate of cattle does not exceed 0.1% [18].

Conclusion. Despite the complex of ongoing veterinary and sanitary measures in these regions of the republic, animal brucellosis is widespread. When studying epizootic monitoring for brucellosis of farm animals in the context from 2016 to 2019. it was found that in all regions of the republic the problem of combating brucellosis remains relevant.

The greatest brucellosis infection of cattle was observed in East Kazakhstan (0.88%), West Kazakhstan (1.06%) and North Kazakhstan (0.14%) regions.

The prognosis for the future in general for animal brucellosis is unfavorable, it will depend on the quality of diagnostic measures and the timely adoption of measures for the immediate elimination of diseased livestock. Outbreaks of the disease will continue to be recorded in the eastern, western and northern regions of Kazakhstan - among cattle.

Thus, it can be concluded that timely monitoring of animal brucellosis, analysis of the degree of animal morbidity and the territorial prevalence of brucellosis allows epizootological control over the dynamics of the development of brucellosis infection in areas with different epizootological status, methodically correct planning of health and preventive measures, and a complex organizational - economic and veterinary and sanitary measures[19]. And also, in a safe zone, scheduled diagnostic serological studies should be carried out annually in order to timely identify animals that respond positively to brucellosis and veterinary and sanitary measures aimed at protecting the economy from the introduction of the pathogen from outside and maintaining the status of well-being [20].

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РЕЗЮМЕ

Бруцеллез – особо опасная зоонозная болезнь, широко распространенная среди животных и людей. Несмотря на то, что с момента открытия возбудителя прошло уже более 120 лет и это заболевание хорошо изучено отечественными и зарубежными исследователями, проблема бруцеллеза остается актуальной во многих странах мира. В ряде экономически развитых стран достигнуты определенные успехи в борьбе с бруцеллезом крупного рогатого скота, вызванным Brucella abortus. Результаты борьбы с бруцеллезом мелкого рогатого скота, вызванного Brucella melitensis, более скромные. В некоторых развивающихся странах эпизоотическая ситуация по бруцеллезу мелкого рогатого скота ухудшается. Бруцеллез, вызываемый B. melitensis, является серьезной проблемой и для здравоохранения [1].

По данным Всемирной организации здравоохранения (ВОЗ), ежегодно более чем в 170 странах мира регистрируется свыше 500 000 случаев впервые выявленного бруцеллёза, из которых больше половины – среди населения стран Восточного Средиземноморья и Ближнего Востока [2]. В неблагополучных по бруцеллёзу регионах реальная заболеваемость может быть от 10 до 25 раз больше официально регистрируемой . На эндемичных по бруцеллёзу территориях, где бруцеллёз – глубоко укоренившаяся проблема, инфекция имеет глобальные, далеко идущие негативные последствия для здравоохранения и экономики государств. Основной целью проведенных исследований являлся мониторинг эпизоотологической ситуации по бруцеллезу животных в Республике Казахстан (РК) [3].

ТҮЙІН

Бруцеллез – жануарлар мен адамдар арасында кең таралған аса қауіпті зооноздық ауру. Қоздырғыштың ашылғанына 120 жылдан астам уақыт өткеніне және бұл ауруды отандық және шетелдік зерттеушілер жақсы зерттегеніне қарамастан, бруцеллез мәселесі әлемнің көптеген елдерінде өзекті болып қала береді. Бірқатар экономикалық дамыған елдерде бруцеллезбен қоздыратын ірі қара малдың бруцеллезімен күресуде біршама табыстарға қол жеткізілді. Brucella melitensis қоздыратын ұсақ мүйізді малдардың бруцеллезімен күрестің нәтижелері біршама қарапайым. Кейбір дамушы елдерде ұсақ малдың бруцеллезі бойынша эпизоотиялық жағдай нашарлауда. B. melitensis қоздыратын бруцеллез де халық денсаулығының басты проблемасы болып табылады.

Дүниежүзілік денсаулық сақтау ұйымының (ДДСҰ) мәліметтері бойынша жыл сайын әлемнің 170-тен астам елінде жаңадан анықталған бруцеллездің 500 мыңнан астам жағдайы тіркеледі, оның жартысынан көбі Шығыс Жерорта теңізі мен Таяу Шығыс елдерінің тұрғындарына тиесілі. . Бруцеллезге бейім аймақтарда нақты аурушаңдық ресми тіркелгеннен 10-нан 25 есеге дейін жоғары болуы мүмкін. Бруцеллездің тамыры терең проблемасы болып табылатын бруцеллездің эндемикалық аймақтарында инфекция халықтың денсаулығы мен мемлекеттердің экономикасы үшін жаһандық, ауқымды жағымсыз салдарға ие. Зерттеудің негізгі мақсаты Қазақстан Республикасында (ҚР) жануарлардың бруцеллезінің эпизоотиялық жағдайын бақылау болды.