European Journal of Agricultural and Rural Education (EJARE)
Available Online at: https://www.scholarzest.com
Vol. 2 No. 7, July 2021,
ISSN: 2660-5643

STUDY OF THE DEGREE OF BACTERIAL CONTAMINATION OF MILK OF COWS IN SORKROD AND BEHSUD DISTRICTS OF NANGARHAR PROVINCE (AFGHANISTAN)

Rahmani Abdul Sabur[1]
Salimov H.S[2]
[1] Doctoral student of Samarkand Institute of Veterinary Medicine
[2]Doctor of veterinary sciences, professor. Samarkand Institute of Veterinary Medicine
Email: hs_Salimov@mail.ru

Article history:

Received June 1st 2021
Accepted: June 21th 2021
Published: July 28th 2021

Abstract:

This article describes the results of microbiological studies of the milk of cows suspect in the disease in the Sorkrod and Behsud districts of the Nangargah province, where a high degree of opportunistic intestinal microflora such as Shigella, Salmonella and Escherichia was found.

Keywords: Milk, cow, acidity, pollution, salmonella, shigella, escherichia

RELEVANCE

Milk is the secret of mammals' mammary glands, which they use to feed their offspring. The complex chemical composition, the relationship of individual components determine the specific properties, high nutritional and biological value, characteristic only of milk. The nutritional value of milk is due to its rich content of protein, fat, sugar, vitamins, enzymes, pigments and minerals necessary for the growth and development of young animals. The biological property of milk is the ability to delay the development of microflora for a certain time (bactericidal phase). This property depends on the acidity of the milk. With an increase in the acidity of milk by 10T, it leads to a loss of bactericidal activity. Bactericidal substances are contained only in freshly milked milk; when heated, they are destroyed. The duration of the bactericidal phase depends on the rate and depth of milk cooling, the health of the animal, the amount of microflora, compliance with veterinary and sanitary rules for obtaining milk, etc. (1,3).

Milk consumed by a person must be fresh, chilled, in exceptional cases it is allowed to drink without refrigeration, but only within 2 hours after milking. Milk should be homogeneous, clean, free of foreign tastes and odors, white or slightly yellow, without precipitation, flakes and not frozen. Depending on the physicochemical and microbiological parameters, milk is evaluated in two grades. The first grade includes milk with an acidity of 16-180T, class I for bacterial contamination and group I for the degree of mechanical purity. The second grade includes milk with an acidity of 16-200T, class II for bacterial contamination and group II for purity. In all cases, the density of milk must be at least 1.027, acidity at least 150T. The pH level of fresh milk is 6.4-6.8, with such a weakly acidic environment, the development of putrefactive and pathogenic microflora is delayed. In some diseases (mastitis, foot and mouth disease, tuberculosis, etc.), freshly milked milk has not acidic, but neutral or slightly alkaline reaction (pH 7.0-7.4), therefore pH can serve as an indicator that milk is obtained from sick cows.

Milk obtained from sick or suspicious cows can be used for human consumption only after high temperature treatment (pasteurization or boiling). Milk that does not meet the requirements of the second grade, but with an acidity of not higher than 210T, bacterial contamination of at least class III, and a purity of at least group II is considered non-grade. Such milk should not be mixed with milk from healthy animals. To prevent and reduce milk contamination, first of all, we must identify the source of contamination to avoid light contamination.

Milk contamination can be found in the environment around the teat, dishes, objects and vehicles. Usually, micrococci, streptococci, salmonella, escherichia, compilobacteria, clostridia, etc. are isolated from milk. All this described has predetermined the study of bacterial contamination of milk of cows.

THE AIM OF THE STUDY

The aim of the study was to study the bacterial contamination of milk from cows in the Sorkrod and Behsud districts of the Nangarhar province

MATERIALS AND METHODS.

The studies were carried out on 60 different milk samples from cows from the Sorkhrod and Behsud districts in Nangarhar. Before collecting milk samples, the utensils and instruments used were sterilized, and various culture media were prepared. Using a sterile syringe, 4-5 ml of milk was taken from local cows. From 8 to 10 samples were taken daily and delivered to the indicated laboratory for isolation and cultivation.

Milk samples were examined for bacterial contamination in the Etihad Microbiology Laboratory under sterile conditions. For sowing milk samples, we used high-quality artificial nutrient media (mesopatamia broth - MPB and mesopatamia agar - MPA). From the grown culture, smears were prepared and stained according to Gram to determine some characteristics of bacteria: type of staining, morphological forms. At the same time, in order to detect Salmonella, inoculations were made on special diagnostic media Endo and Ploskarev, 2-3 tubes from each sample and incubated in a thermostat at a temperature of 370-380C, pH 7.4-7.5. The morphology of bacteria was studied under a microscope. To identify isolated bacteria, Bergi's (1980) bacterial determinant was used. When studying the biochemical properties of Salmonella culture in the inoculum, the formation of indole, hydrogen sulfide, gelatin dilution, urea breakdown, milk coagulation, growth on Simmons citrate medium, and reactions with methylroth were determined. The species identification of the isolated cultures was carried out according to the scheme proposed by J. Wegtniek C.A. and Reddy.

RESEARCH RESULTS.

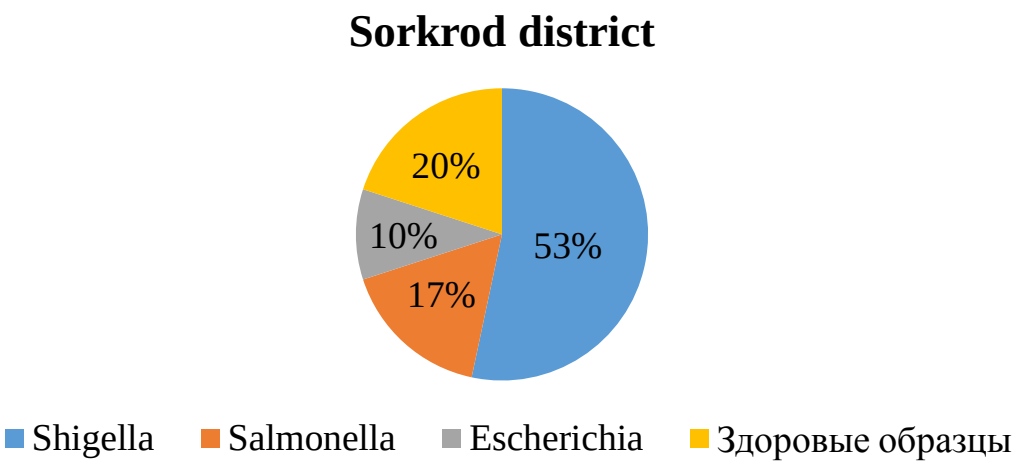
The results of a bacteriological study of cow milk for the presence of microflora in the Sorkrod and Behsud districts of the Nangarhar province are presented in the table. As can be seen from the data in the table, out of 30 milk samples collected in the Sorkrod area, a total of 24 positive samples were registered with bacterial contamination with intestinal microorganisms, including 16 samples of Shigella, 5 - Salmonella and 3 - Escherichia. We observed an almost similar result in milk samples from cows in the Behsud region. So, in these samples also from 30 milk samples, 22 positive samples were detected, including 13 samples of Shigella, 6 - Salmonella and 3 - Escherichia.

Table 1.
Results of bacteriological examination of milk of cows for the presence of microflora in the districts of Sorkrod and Behsud

№ p/p	District names	Number of milk samples	Name and number of milk samples infected with microorganisms			Pure milk
			Shigella	Salmonella	Escherichia	
1.	Sorkrod	30	16	5	3	6
2.	Behsud	30	13	6	3	8

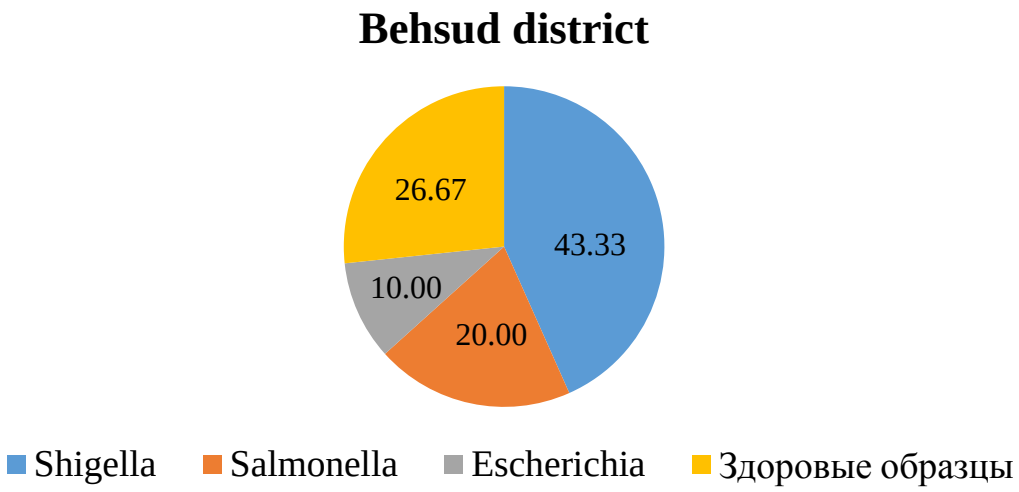
Consequently, most milk samples from suspicious cows in the Sorkrod and Behsud districts contain the bacteria Shigella, Salmonella and Escherichia. Moreover, the milk of cows obtained in the Sorkrod area was infected more than 2 times more Shigella (53.33%) compared to Salmonella (16.67%) and Escherichia 10% taken together. Only 20% of the samples were found to be pure for microorganisms (diagram 1.).

Diagram 1. Degree of contamination of milk of cows with microorganisms in the region of Sorkrod, Nangarhar province



A study of the degree of contamination of milk of cows with microorganisms of the gastrointestinal tract in the Behsud district of Nangarhar province also showed that of 30 milk samples, Shigella, 20% Salmonella and only 10% Escherichia were detected in 43.33% of cases. Only in 26.67 cases the milk turned out to be pure, not infected with bacteria.

Thus, the milk of cows suspected of having the disease is intensely infected with Shigella, slightly Salmonella and a very low level of Escherichia. According to the requirements of the veterinary and sanitary assessment of milk received from patients and suspected of the disease, especially those with a high degree of infection with Shigella, Salmonella and Escherichia, must be boiled.



CONCLUSIONS

As a result of comprehensive microbiological studies of cow milk in the Sorkrod and Behsud districts of Nangarhar province (Afghanistan), a high degree of opportunistic intestinal microflora, such as Shigella, Salmonella and Escherichia, was established.

1. Found in the milk of cows from 43.33% to 53.33% of cases, the presence of Shigella, 16.67 -20% - Salmonella and only 10% Escherichia. Consequently, the milk of cows suspicious of the disease is more rapidly infected with Shigella, weakly with Salmonella, and less - with Escherichia.

REFERENCES:

1. Zhitenko P.V., Borovkov M.F., Makarov V.M. and other Expertise of milk and dairy products. Veterinary and sanitary examination of animal products. - Moscow VO "Agropromizdat", 1989. - pp. 233-269.
2. Obaid Obaidulla - Medical Microbiology. - Kabul, Afghanistan, 2011. -S. 84-89.
3. Sviridenko G.M. The main criterion for milk safety is animal health (salmonellosis). // Dairy industry № 2. - M., 2009. P. 44 - 46
4. Hashimi Tabar Gulam Reza - Veterinary Microbiology.-Mashhad 2014. -P. 15-22.