
Microbiological value of the ewe's milk sample as the criterion for GMP and HACCP on the farms with machine milking

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According to the Slovak legislation, sheep farm producing milk for the human consumption, must keep to the rules of good manufacturing practice (GMP) and HACCP system (Hazard analysis critical control point). The critical points during machine milking of ewes are described in this article.

In Slovakia, ewe's milk is produced from a herd of animal that have been subjected to periodical veterinary inspections.

The adoption of EC Directive 92/46 to the Slovak legislation emphasized the role of hygiene in milk production. In addition to the bacteriological standard for the raw ewe's milk, the milk must be produced in herds having proper good status of hygiene, equipment cleaning and animal health. Beside this, sufficient hygienic conditions for milking, milk treatment and processing must be done in each ewe's farm. Nowadays, in Slovakia also machine milking of sheep is used. Thus is minimized the risk for the consumers, mainly if the unpasteurised ewe's milk is used for the cheese making. Low microbiological value of ewe's bulk milk sample (total bacteria count is less than 500 000 and 1 500 000 in 1 ml milk, respectively) sets up one of the basic assumption for the effective economical selling of milk and milk products. Worst milk quality will hard reflect milk economy. That is why it is important find the all critical points in machine milking of ewe's which may negative influenced the consequent milk quality.

The prerequisite to producing hygienic milk is udder health (Ariznabaretta et al., 2002). Mastitis, particularly subclinical and chronic is the most persistent and widely spread group of diseases of importance to milk hygiene in dairy animals. Previous study have confirmed that

Abstract

Introduction

bacteriological examination of milk and milk somatic count (SCC) are reliable methods for detecting subclinical mastitis in dairy ewes (González-Rodríguez et al., 1995), and inverse relationship between SCC and milk yield has been proved (Gonzalo et al., 1994). Traditionally, the most common mastitis – causing agents have been classified as minor or major pathogens according to the degree of inflammation they produce in the mammary gland. The most prevalent etiological group is represented by staphylococci and particularly by coagulase – negative staphylococci, considered to be minor pathogens or commensals by many authors. Changes in the udder health are characterized by physical, chemical and usually bacteriological changes in the glandular tissue. The most important changes in the milk include discoloration, the presence of clots and the presence of large numbers of leucocytes. Although there is swelling, heat, pain and induration in the mammary gland in many cases, a large proportion of mastitic glands are not readily detectable by manual palpation nor by visual examination of the milk using a strip cup. Because of very large numbers of such subclinical cases the diagnosis of mastitis have come to depend largely on indirect tests which depend, in turn, on the leukocyte content of the milk.

In the Slovak ewe's milk producers, there are seldom problems with herd mastitis in sheep. This is because each change of the udder indicates separation of the animal. The affected animal is discarded from the sheep flock. Because the antibiotic therapy is very expensive, it is not common to use it in the sheep flock.

According to the Slovak legislation, sheep farm producing milk for the human consumption, must keep to the rules of good manufacturing practice (GMP) and HACCP system (Hazard analysis critical control point). Following critical points should be observed on the sheep farm with machine milking to receive high quality raw milk (only as example):

1. Health of the mammary gland:
a) good; b) satisfactory; c) bad
2. Cleaning of the mammary gland:
a) none; b) dry; c) a damp cloth; d) a wet cloth; e) shower
3. Teat dipping:
a) yes – after each milking; b) yes – only in the case of some visual abnormalities on the udder; c) none
4. Cleanliness of the pipe line milking system:
a) automatic control of the sanitation; b) hand control of the sanitation
5. The speed of milk flow in pipes:
a) the length of a pipe line system; b) a backwards milk flow
6. The speed of milk cooling:
a) precooler of milk; b) modern type cooler; c) old type cooler
7. Temperature of milk in cooler:
a) from + 4 °C to + 6 up to 8 °C; b) below + 4 °C; c) above 4 °C
8. Milk filtration:
a) under pressure; b) descent, above the cooler; c) none

Except these examples, also temperature and concentration of cleaning and disinfection solutions, visual control of the equipment, personal hygiene, etc, should be included.

Bad hygienic conditions on the farm, low hygienic level of the workers as well as not sufficient milk standard for the buying and selling and processing of the raw ewe's milk result in milk rejection. The presence of these shortcomings may require a change in flock management practices to minimize the risk factors that contribute to bad quality of milk.

Poor flock hygiene increases the risk of bacteria entering the ewe's udder. Dirty teats and udders increase the chance of bacteria entering the teat canal. This increases the risk of ewe ending up with a subclinical or clinical udder infection. Improper milking machine function can result in uneven milk out, liner slips and damaged teat ends. These factors can all have a negative impact on udder health.

It is very good that ewe's milk producers in Slovakia start to use machine milking. Thus is the quality of the raw milk increasing and total bacteria count not exceed the stated maximum values. The following microorganisms were isolated from the individual milk samples of the raw ewe's milk: coliforms, *Staphylococcus capitis*, *St. caprae*, *St. cohnii*, *St. epidermidis*, *St. Haemolyticus*, *St. xylosus*, *St. aureus*, as well as *Escherichia coli*, *Klebsiella* spp., *Pantotea* spp., *Micrococcus luteus* were detected only in rare cases. From the hygienic point of view, the following shortcomings on the sheep farms were observed: presence of insects, mainly flies, dirty walls and floors, insufficient cleanliness of the back body of ewes, insufficient personal hygiene, insufficient padding of doors and windows, exceed temperature in the ripening rooms, spider webs in parlours, milk rooms, etc. Despite these negatives, the Slovak producers of ewe's milk have their important position in dairy industry, because they understand the basic fact, that they are producing safety milk products not only for the Slovak consumers but also for all consumers in also European union.

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References

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