

IDENTIFYING SOURCES OF MILK CONTAMINATION IN SOME COW FARMS IN BIHOR

Cornelia Cociuba*

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea;
Romania, e-mail: cociuba.cornelia@yahoo.com

Abstract

Conditions for the production, storage, transport and recovery of milk and milk-based products are regulatory Ord. MAAP 389/2002 for the approval of rules on veterinary health conditions for production and marketing of raw milk, heat-treated milk and products the milk published in the Official Gazette no. 860/28.11.2002

Norma health includes regulations on animal health conditions for obtaining raw milk raw material, milking hygiene, milk collection and its transportation from the farm center for the collection and processing units, the standards for the treatment of milk processing units, the conditions health that must meet these units.

Key words: Conditions of hygiene, milking, milk hygiene rules for milk production standard

INTRODUCTION

Following hygienic conditions during the milking process is an essential condition for obtaining a healthy quality product. Requirements concerning the state of health of the animal refer mainly to milk production animals which are in a good state of health by means of continuous improvement of prevention and fighting against different diseases which could affect milk production. Conditions for production, storage and transport of milk and dairy products are set through Government ordinance MAAP 389/2002 for the approval of sanitary veterinary norms regarding production and sales of raw milk of thermal treated milk and dairy products published in the Official Monitor no. 860/28.11.2002. The sanitary veterinary norm stipulates requirements concerning the status of animal health in order to obtain milk raw material, milking hygiene, milk collection and its transportation to the collection point and processing units, standards for treatment of milk inside processing units, sanitary veterinary conditions these units have to comply with.

According to the above mentioned in the hereby sanitary veterinary norm no national requirements are linked to direct sales of the producer to the consumer of unprocessed milk from animals which are not ill with tuberculosis and brucellosis or dairy products obtained in a private household out of unprocessed milk while such health animal conditions are fulfilled.

MATERIAL AND METHOD

We have tackled in this paper 2 (two) units (farms) one with an automated milking process and one with manual milking process.

The animals taken into consideration are from the breeds Baltata Romaneasca and Holstein Friza.

The factors which are influencing in a high percentage milk production and especially its quality are: the moment for feeding, elimination of waste and body hygiene of the animals. Concerning the sleeping environment of the animal, it is well known the fact that the frequency for replacing the sleeping material, and its humidity has a great impact on the microbial air charge and thus consequently on the quality of milk.

Obtaining milk with reduced microbial charge is also done with a high rhythm of waste evacuation.

Based on analysis performed in the two units we have found a correlation between waste evacuation and the milking system. Thus, in the farm with mechanical milking system, the waste evacuation and trash is done by means of cleansers while in the manual milking system the waste evacuation and trash is done manually. Also, the bandage of animals for the mechanical milking system is performed twice a week. The findings in the two farms show that the bandaging is not done according to hygiene norms. This irregularities concerning body hygiene before milking represents a risk factor for milk contamination and presence of mastitis.

An important issue for following hygiene norms is related to cold and warm water supply for proper hygiene of the milking devices and collection and transport recipients. This condition is generally fulfilled in the mechanical milking systems and is not fulfilled for manual milking system. In the no.1 table I made when conditions present in Check.

In the units where one of the water supplies is not present, washing and decontamination of milking devices and collection and transport recipients is not according to norms of hygiene.

Another issue influencing milk contamination in farms is the lack of support for drying of recipients. If the recipients are not properly washed and dried, the water remaining in the recipients is an adequate environment for micro organisms which finally ends up in the milk. Also, direct access from the stable to the storage building for milking devices and milking recipients represents a construction mistake of these buildings, where not even the minimum hygienic conditions are followed because insects come directly in these rooms and also in contact with the final product, the milk.

Washing and disinfection of the mammary before milking obtains a less infected product. This measure is used in all milking farms and also in the units under observation follows this procedure. Cleaning the mammary after washing and decontamination has a high effect preventing micro organisms to go into the milk which are still present in the washing water and in all products used for decontamination. In the two farms cleaning the mammary is used with linen towels and gauze. Washing and disinfecting the linen towels and gauze used for cleaning the mammary is compulsory. They are being washed with detergent, are boiled and rinsed with plenty of water.

Table.1

Arrangement of equipment of storage building for milking devices, buckets and transport recipients of cow farms

| | | Manual milking | | Mechanic milking | | Total no of farms | |
|-------------------------|--------------|----------------|-------|--------------------|-------|-------------------|------|
| | | Nr./ total | % | Nr./ total | % | Nr./ total | % |
| Access in the building | From stable | 3/13 | 23,07 | 10/16 | 62,5 | 1/2 | 50 |
| | From outside | 10/13 | 76/93 | 6/16 | 37,5 | 1/2 | 50 |
| | | $\chi^2=1,57$ | | (p>0,05) | | | |
| Water supply | Hot | 7/13 | 53/84 | 16/16 | 100 | 1/2 | 50 |
| | Cold | 13/13 | 100 | 16/16 | 100 | 1/2 | 50 |
| | | $\chi^2=9,25$ | | (p<0,05) | | | |
| Sewage | Yes | 5/13 | 38,46 | 16/16 | 100 | 1/2 | 50 |
| | No | 8/13 | 61,54 | - | - | 1/2 | 50 |
| | | $\chi^2=55,6$ | | (p<0,05) | | | |
| Supports for recipients | Yes | 7/13 | 53/84 | 15/16 | 93,75 | 22/2 | 75,8 |
| | No | 6/13 | 46,16 | 1/16 | 6,25 | 7/2 | 24,1 |

The main condition immediately after milking is that the milk is being sieved usually through gauze to remove suspensions.

After this procedure the requirement is to store the milk in a cooling tank immediately after milking as per legal requirements in our country and European legislation.

Legal requirements, sanitary veterinary regulations as well as the Ordinance of the Health Department nr 875/1998 and European requirements stipulate the temperature for preservation and transport of max 6⁰C - 10⁰C.

When these hygienic requirements are not followed, namely concerning washing and cleaning the mammary, hygiene of milking devices, hygiene of collection recipients the final product is compromised and thus the product is forbidden for sales.

Washing and disinfection of milking devices, collection and transport recipients are done immediately after their use using disinfectants accepted by legal requirements in our country and the European Community.

By means of washing and disinfection of milking devices, collection and transport recipients with alkali substances removes a big part of the micro organisms of their surface. In any of the farms under observation there is no use of acid substances.

RESULTS AND DISCUSSION

Milking should be conducted under strict conditions of hygiene. Immediately after milking, it is essential that the milk is stored in the TR-a clean, under conditions that re not affects the quality of the it. If milk is not taught at the collection center in more than two hours to milk, it must be cooled to a temperature of 8 degrees C or less - where collection daily and a temperature 6 degrees C or less - Where the collection-development is not every day. Cold-run space is cooling the milk best, but where it can not be used or producer of milk does not have such devices, we recommend cooling milk in other ways: in storage cellars, that increase, putting the container milk in a basin with cold water from the fountain, stream, and river. In the units where one of the water supplies is not present, washing and decontamination of milking devices and collection and transport recipients is not according to norms of hygiene.

Another issue influencing milk contamination in farms is the lack of support for drying of recipients. If the recipients are not properly washed and dried, the water remaining in the recipients is an adequate environment for micro organisms which finally ends up in the milk. Also, direct access from the stable to the storage building for milking devices and milking recipients represents a construction mistake of these buildings, where not even the minimum hygienic conditions are followed because insects come directly in these rooms and also in contact with the final product, the milk.

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CONCLUSIONS

In some farms in the Bihor like in other counties in the country there are problems concerning milking hygiene and primary treatment of the milk.

In manual milking farms the equipment is not according to norms only some of them following completely European hygiene norms. There is also a small number of farms which have no sewage inside the shelters, no cold and hot water supplies. These lead to a milk being obtained in an unhealthy environment through procedures with high risk of contamination.

In order to avoid these unconformities, we would recommend the following:

- Building adequate farms with proper equipment (with waste sewage, with cold and hot water supplies etc.) according to legal requirements and new European norms;
- Having and using milking devices in order to eliminate manual milking;
- Having and using equipment for waste and left over food removal;
- Following all legal requirements in our country and from the European Community concerning Food Safety.

In order to establish the working hours one has to take into consideration that during 24 hours, a cow has to ingest 0,8 kg of food for one litre of milk produced, which has to be milked at least twice a day every 12 hours, which has to rest in order to improve rumination, ruminant digestion and milk secretion and to move (daily walk) to create stimulus for neuron endocrine processes. Within the same time interval cleaning of the shelter and hygiene of the animal must be performed together with a series of auxiliary activities but with high importance in the technological flow. There is a strong connection between these activities which determines also the sequence of these activities;

The working schedule must start with elementary cleaning of the sleeping place and the back side of the animal. This is followed by the preparation for the morning milking. This means preparing milking devices (recipients, buckets and milking device), which have to be washed and disinfected the previous evening (immediately after the evening milking). The one performing the milking puts on the sanitary protection suit only to be used during milking, washes his/her hands and prepares all necessary for uterus cleaning. (hot water, towel for each cow or one way use towel, pre

milking recipient, disinfectant for mammary, clean and dry gauze for sieving the milk);

The milking of each cow must start with washing and cleaning the uterus, pre milking and uterus massage, which must be followed by the milking as such after one minute, enough time for the oxytocin to act. The release of milk cannot happen without a previous stimulation of the muscle structure of the uterus to the oxytocin and its period of action is 6-10 minutes. The absence of this hormone in the blood which irrigates the mammary makes the cells of the myoepithelium not to contract and there is no ejection of milk.

If the emptying procedure is not complete, there is a risk for the residual milk to become a growing environment for micro organisms which go into the uterus up ways (through the mammary sphincter). Besides, an incomplete milking keeps a high intra mammary pressure which limits further secretion of milk.

Milking several cows must take place in the same order and at the same time, in order to improve condition reflexes. During milking no other activities must be performed and especially no fibre feed must be administrated which increase the level of powder inside the shelter and also no stored feed, which create a smell which can decrease the quality of the freshly milked milk.

Stress factors of nay kind should be avoided (noise, shocks and hitting of the animals etc.), as they produce an inhibiting effect over the evacuation of milk.

After milking, the milk is placed in recipients after previous sieving, which should be then covered and taken out of the shelter to avoid the contact germs, dust and smells from inside the shelter and taken for cooling. The shorter the period of cooling the milk from 37 degrees Celsius to 5 degrees Celsius is the higher the chance to obtain milk with low microbial charge.

After taking the milk out of the shelter, the first type of food from the daily portion is given. It is better if this is a good type of hay (with high consumption) in order to allow for a short period of time to follow the food concentrates. Regarding the type of concentrated food this is conditioned by the volume of food given in order to achieve the best energetic-protean ratio. For food with high protean volume (Lucerne and clover as green mass, or stored hay) energetic concentrates are better (cereals) and for food with high energetic volume (grains: corn, Sudan grass, natural lawn as green mass, dry or stored) protean concentrates are better (wheat and groats etc.). When energetic concentrates are used (easily fermented cereals rich in starch) must be administrated in small portions several times, not more then 2 kg for one portion. The daily quantity of concentrates must be established

based on the daily milk production (cca 100-250 g/litre for average production and cca 300-400 g/litre for big productions), but one must take into consideration not to go over 50% of the ratio's dry substance. For cows with average milk production (up to 2 l/day) the optimum ratio is of 40% concentrates/60% food in volume (expressed in SU). We would suggest an alternation between concentrates and fibre in order to improve ruminant digestion;

Hygiene of milking devices starts with a pre wash with water at 40, degrees Celsius, in order to avoid burning the deposits with protein value which is followed by washing with water at 80-85 degrees Celsius and which ends with a cold water rinsing. Choosing the detergent is done based on the type of deposits. In order to remove grease and protein stains alkali detergents are recommended and for removing mineral stains (mainly calcium) acid detergents are recommended. These detergents must not be used simultaneously because they neutralise each other. They must be used alternatively and the frequency for use of the acid detergents shall be established based on the level of calcium deposits on the recipients, level which depends on the hardness of the water used.

These activities must be performed until 8 o'clock when the animals must be taken out of the paddock, where to get cca 50% of the volume of the food and where daily walking is done or going to the meadows. Both in the paddock and in the meadows, milk cows must have adequate supply of water, clean and fresh which can allow free watering and adequate shadow for a good sleep. Also here, one has to discover animals which are in the insemination period. We must add the fact that the optimum moment to discover animals ready for insemination is the period of time when he other animals are resting (during lunch time or in the night). The insemination must be done 12 hours later after being discovered as follows: cows discovered during the morning must be inseminated in the afternoon, while cows discovered in the afternoon must be inseminated the next morning.

For cows at the beginning of the period of lactation and which have milk production of over 40 litres/day a third milking can be performed (at noon) wherever possible. But, due to organisational issues of a third milking, this third milking can also be eliminated if during the 2 other milking (morning and evening) there is a complete and quick emptying of the mammary and stimulate milk secretion.

The second milking must be performed within 12 hours from the first one. Before preparing the animals for milking, they must be placed back inside the shelter where they receive draft beer and/or concentrates.

Tasks related to preparation for milking, the milking as such, milk collection, washing and disinfection of devices are the same and they should be performed in the same order. For cows which have been eating on the

meadows, a food supplement can be given after milking (green mass or hay).

It is recommended to keep cows during night time in the paddocks being led to the shelter the second morning for milking preparations. This procedure must be used whenever weather conditions allow for it.

During winter cows stay inside the shelter after the evening milking, and taking the cows out in the paddock can be cancelled unless weather conditions allow for it. Small and mid sized farms are different from the big size farms because of the number of animals in use and the type of property. Their advantage comes from a lower volume of work and can have a higher efficiency in the activities which allows for better care and increase in exploitation.

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