

## Popular Article

### Clean Milk Production: Health concern

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Clean milk is defined as the milk drawn from the udder of healthy animals, which is collected in clean dry milking pails and free from extraneous matters like dust, dirt, flies, hay, manure, extraneous water and drug residues and contains relatively small number of bacteria none of which are pathogenic to humans. Freshly drawn milk from udder is seldom sterile as udder itself harbour bacteria (nonpathogenic in uninfected udder) and contamination occurs during production, procurement and transit which can adversely affect its quality. Raw milk quickly becomes sour when it is stored for long periods at high ambient temperatures This is because, the inherent lactic acid bacteria and contaminating microorganisms from milk vessels or the environment break down the lactose in milk to lactic acid and such milk is not acceptable for sale.

Raw milk and pasteurized milk are considered satisfactory when coliforms are absent in 1:100 and 1:10 dilution respectively

#### Factors altering quality of milk

The quality of milk is highly influenced or altered by various factors like a flavour and odour, microbial content/ contaminants, somatic cells in milk, antibiotic and drug residues, residues of plant protection agents etc. Milk may acquire off-flavours and /odour from various sources, these are feeds and weeds flavours (wild onions and garlic, strong flavoured feed stuffs like Lucerne silage etc.), cow-barney flavour (develops due to poorly ventilated and inadequately cleaned milking barn, rancid flavour (due to presence of free fatty acids), oxidized flavour (due to exposure of milk to sunlight, contact of milk with oxidizing agent such as rust, copper and chlorine), fly sprays, medications, strong flavoured disinfectants etc.

There are certain bacteria capable of multiplying in unprocessed milk and then surviving pasteurization and/ or refrigeration process. The primary source of these bacteria is the environment which includes air, dust, dusty feeds, dusty barn, dirty equipment, operators, diseased animals, contaminated udder etc.

There are three types of somatic cells typically found in milk:

- Epithelial cells
- Macrophages
- Polymorph nuclear leucocytes (PMK's)

Milk from non-infected glands contain predominantly epithelial cells and macrophages while milk from infected glands generally contains high concentration of PMN's with little increase in other cell types. Consequently, somatic cell count is an important indicator of udder health.

It has been observed that trend of use of various pesticides herbicides insecticides growth hormone etc. for higher fodder productivity, antibiotics hormonal preparation and feed additives to enhance animal productivity has increased. These substances enter the food chain through animals and poses danger to human, animal and ecosystems health.

### **Well-being of clean milk production**

- It enhances better keeping quality and commercial value.
- It is safe for human consumption as it is free from diseases producing microorganism.
- The product prepared from clean milk are very high quality

### **Initiative to produce quality milk**

Educational and training programs should be organized for the farmers for making them aware of the importance of clean milk production.

#### **1. Milkman and their milking procedures**

- Milkman should be free from contagious diseases like Cholera, Typhoid, Diphtheria and Tuberculosis.
- Milkman should be clean and avoid sneezing, coughing, smoking as well as spitting and chewing of tobacco just before and after milking.
- Milkman should thoroughly clean their hands and arms before milking. Fingers nails should be kept trimmed. Preferably liquid soap hand wash be used and clean towel to dry the hands.
- Milkman should avoid wrong milking practice like knuckling and incomplete milking.
- Pre-dipping is very effective step in mastitis control. Pre-dip should cover 75% of teat surface and should stay on the teat for minimum of 20-30 seconds.
- If calf suckling is followed, at an appropriate time calf should be separated and tide.

- Drying of the teats with individual paper or towel is the most important step. Drying does more to lower SCC and reduce clinical mastitis than other steps. The teat and teat end must be wiped clean and dry.
- Drawing of milk should be started 45 to 90 seconds after stripping. If the timing is delayed, there will be longer milking times and less milking harvested and may lead to incomplete milking resulting in favourable condition for bacteria to grow in udder.
- A minimum of 75% of the teat must be covered with dip. So as to replace the milk film with a layer of germicide after milking, thereby preventing more growth of bacteria and

## **2. Milking animals and their environment**

### **a) Health of the animals**

- Animals should be free from diseases like Tuberculosis, Brucellosis, Salmonellosis, Shigellosis, Enteropathogenic E. coli, Streptococcus and Staphylococcus and Pseudocowpox, Louping ill (Tick borne encephalitis), FMD etc.
- Periodical testing should be done for T.B., J.D. and Brucellosis etc.
- Feeding of feedstuffs giving off flavour should be avoided.
- Feeds contaminated with aflatoxins, phytotoxins, heavy metals and radioactive substance should be avoided.

### **b) Cleaning of animals:**

- Grooming, brushing and washing should carry out perfectly to remove dirt, dust, dung, loose hairs and such extraneous material from hind quarters, abdomen, udder and tail of the animal.
- Udder and teats should be washed with warm non-staining antiseptic solution.
- Waterless cleaning of teats by pre-dipping and wiping with disposable paper napkin is the most modern practice to be followed.

### **c) Environmental**

#### **I. Animal Houses:**

- Keep house as dry as possible by providing adequate ventilation, light and cleanliness by removing dust, dirt, mud, dung, urine etc.
- Long axis of the house is preferred in N-S direction that maximum benefit of sunlight can be obtained from E-W.
- Disturbance by flies, mosquitoes, rats, cockroaches, birds etc. should be minimized.

- Periodical white washing is advocated and floor should not be slippery.
- Floor swiping should be done before one hour and there after washing may be done to restrict dust particles to rise and contaminate milk.
- Clipping of udders (mostly in exotic and crossbred cows) is probably one of the most important steps in producing quality milk. Flaming the hairs from udders 3-4 times in a year is a new approach.

## **II. Milking equipment or utensils**

- Microbial contamination of milk with dust at the time of milking can be minimized by using small topped container not the buckets.
- Milking pails should have smooth surfaces (stainless steel is preferable), so that it would be easy to clean, wash and dry using permitted sterilizing disinfectants.
- No traces of detergents are left in the pails which may become extraneous material while using for milking.
- Straining should be done to remove sediments and other foreign materials. If cloth is used it should be washed and dried daily otherwise it will spoil the milk with bacteria from its surface.
- Utensils should be washed the immediately after disposal of milk.