



QUALITY MANAGMENT IN MILK AND MILK PRODUCTS: A REVIEW

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ABSTRACT

Food handling and quality are fundamental issues that ought to be focused on all around the world, essentially with regards to wholesome quality and human wellbeing. Food handling is a logical part of examination that arranges with how food is taken care of, ready, and put away to forestall food-borne sickness. Food. Customary and science-based wellbeing approaches are recognized much of the time. Food can be utilized to spread illness starting with one individual then onto the next; it can likewise be used as a nutritious developing mode for microbes that can cause food contamination, as well as a risky specialist to purchasers' wellbeing. Customary milk creation, alongside terrible rural practices and a clean climate, can be a wellspring of potential dangers in food varieties.

KEY WORDS: Milk, Milk products, Quality and Management.

INTRODUCTION

Food handling and quality are a rising concern all around the world, especially with regards to human well-being. In this respect, numerous nations have been running quality control programs for all food fixings including creature source food sources (El-Ziney and Al-Turki, 2007). Sanitation is a logical discipline managing taking care of, arrangement, also, capacity of food in the way that forestalls food borne ailment. This requires various routine exercises that ought to be followed to forestall possibly serious wellbeing risks. Quality confirmation is all about fundamentally arranged and efficient exercises executed inside all fragment of the quality framework, furthermore, hid depending on the situation, to give good certainty that a specific food thing will satisfy the quality prerequisites. Peril is a natural, synthetic, or actual specialist that is liable to cause an extraordinary arrangement of disease or injury without any its control. Wide scope of food borne ailment can be constrained by schedule exercises like keeping individual cleanliness, legitimate handling of the food, heat treatment at higher temperature, sufficient cooking before utilization and not exposing the food to temperature were microscopic organisms can develop (Addis and Sisay, 2015). Hence, food control is stressed to be a compulsory normal movement implemented by public or neighborhood specialists to concede customers' assurance and guarantee that all food varieties during creation, dealing with, stockpiling, it is protected, healthy and fit to process and conveyance for human utilization. Before a given food thing is consumed, it ought to adjust to somewhere safe and quality prerequisites, truly and precisely marked as endorsed by regulation

(CFSAN, 2007). By directing safe food dealing with, the degree of ailments and fatalities can be forestalled. Safe food taking care of starts at creation and proceeds with all the way through the planning system. If perilous dealing with occurs at any stage, there would be an expected risk. Food dealing with security is basic at the shopper level since numerous buyers have polluted food through an absence of mindfulness. By rehearsing cleanliness before the food is dealt with and guaranteeing the cleanness of all utensils and surfaces, food tainting can be forestalled. The most effective way to guard the food is to permit the food to be defrosted in a cooler. Cross defilement is remembered to have been a typical reason for food tainting. In this way, by utilizing cleaned utensils and surfaces that poor person contacted other food things, the gamble of cross pollution can be incredibly diminished (WHO, 2002).

Food-safety hazards specific to milk and milk products

1. Biological hazards

Milk and dairy items can be harmed by an assortment of miniature living beings, including numerous zoonotic microbes and some infections for instance, retroviruses and cytomegalovirus (Kaufmann et al., 2002). By and large, the microbiological nature of milk during draining is regularly great. Yet, when the milk is emitted from the udder, it very well may be tainted by pathogenic miniature organic entities from many sources (Loessner and Brilliant, 2005). Pathogenic microorganisms that can be debased at various phases of milk creation, taking care of, handling and stockpiling are Sort pseudomonas (*Pseudomonas fluorescens*, *Pseudomonas fragi*, Sort Bacillus (*Bacillus polymyxa*, *Bacillus cereus*), *Brucella* spp, Sort Staphylococcus (*Staphylococcus aureus*), Sort Streptococcus (*Streptococcus agalactiae*), Sort Mycobacterium (*Mycobacterium tuberculosis*). There is additionally one bacterium, called Sort Enterobacter (*Enterobacteraceae* spp) sorted as pathogenic and waste. Microscopic organisms like Sort pseudomonas (*Pseudomonas fluorescens*, *Pseudomonas fragi*), Sort bacillus (*Bacillus polymyxa*, *bacillus cereus*) are said to ruin microbes. Those microbes prior referenced could cause extreme unexpected problems when the defiled milk is consumed by people. Milk ought to be remained careful while being drained, handled and accumulated on making clean climate across regions were defilement could happen. Alongside keeping the milk quality and security, an extraordinary arrangement of milk wellbeing and quality measures ought to be placed in place at any fragment of milk creation, dealing with, handling and stockpiling to guarantee the milk proposed to the buyer is of top notch, protected and healthy. Indeed, however microbes cause serious medical issues, some microorganisms, in particular: *Streptococcus thermophilus*, *Lactococcus lactis* sub spp *cremoris*, and *Leuconostoc lactis* make the maturation of milk items like yogurt which is protected from being consumed. The bacterium *Lactococcus lactis* sub spp *diacetylactis* makes a difference to give great flavor to the milk. microorganisms like *Brucella abortus*, *Listeria mycobacterium*, *Bovis monocytogenes*, *Coxiella burnetii* what's more, *S. Aureus* and Mycotoxins for instance, aflatoxin have been viewed as the principal effortlessly attractive microorganisms representing a critical wellbeing peril. It is consequently required to be aware of the principal wellspring of contamination for each attractive microorganism and limit pre arranging factors which could cause the decay of milk and milk items quality. Crowd wellbeing boards like immunization, serological screening, tuberculin testing, tick control, mastitis control, feed cleanliness what's more, control, screening tests on creature feed need to be directed on standard premises. Besides, the dairy ranchers ought to embrace suitable controlling measures (sanitization and cleanliness insurances for in danger laborers) while the milk is being handled and taken care of before arrangement to shopper.

2. Chemical hazards

Compound dangers can be depicted as pollutants of normally happening poisons, direct what's more, circuitous food added substances, pesticide and veterinary medication deposits and natural pollutants (for instance, dioxins) (WHO, 2009).

3. Physical hazards

An actual danger can be characterized as any physical material not regularly found in a food which can make sickness or injury the people who eat the item. It incorporates various sorts of materials frequently alluded to as unfamiliar materials or items like soil particles, hair, leaves, elastic and backbone which can get into the milk at the hour of draining (Walstra et al., 2006).

Contaminants of milk and milk products

Dairy item impurities are portrayed as far as the degree of various variables that can make the food hazardous counting unfortunate taking care of, unfortunate capacity conditions, normally happening poisons tracked down in the actual food, defiled water, pesticides and medication buildups and absence of satisfactory temperature control.

Quality assurance and control of milk and milk products

Quality affirmation and certificate plans (QAS) is by and large made sense of as any overarching set of principles, standard or set of requirements, which empowers partners of the food store network to ensure consistence with what is announced and to flag this as far as possible or next client. For the most part, QAS will in general separate and assurance items comparable to their biochemical structure; their beginning and the beginning of the unrefined substance used to create them; the creation procedures utilized; buildups of pesticides in items; the rearing and day to day environments of creatures and moral parts of creation (European Networks, 2006)

Milk quality control

Milk quality alludes to a mix of qualities (Synthetic, physical, bacteriological and stylish) that lift up the agreeableness of the milk item. Milk security and quality confirmation has been turning into an area of need and need for purchasers, retailers, makers and controllers. Around the world, the event of food borne infections have been expanding and global food exchange has been disturbed by as often as possible continuous disagreements about food handling and quality necessities (Lemma et al., 2008; FAO, 2010). Endless milk items bound to be sent out to the worldwide market ought to go through the strictest quality principles. To accomplish the acknowledged quality norm, it is required to screen and control the nature of milk at the grass root level. Milk quality control is the usage of globally endorsed tests to guarantee the use of supported practices, principles and guidelines concerning the milk and its items (FAO, 2011). Milk quality testicles are intended to guarantee that milk items adjust the acknowledged principles for synthetic creation and immaculateness as well as levels of assortment of miniature creatures (Kavitha and Archana, 2015).

Area of quality control

1. At the farm

Quality control and confirmation should begin at the ranch where the milk is delivered (Mansel, 2010), by utilizing supported practices of milk creation furthermore, dealing with and perception of guidelines concerning the utilization of veterinary medications on lactating creatures and guidelines against defilements of milk, and so forth. (Battu et al., 2004).

2. At milk collection centers

All milk gathered from various ranchers having their own significant administration exercises or milk which is built from different gathering focuses should be checked for its healthiness, bacteriological and substance quality (Felleke et al., 2010)

3. At the dairy factory and within the dairy factories

Once the dairy factory has accepted the milk brought from different farmers and numerous collection centers, it holds the responsibility of ensuring that the milk is handled hygienically and processed to various products.

4. During marketing of processed products

The public authority of any nation utilizes public wellbeing specialists complying with the law to check the nature of food fixings sold for public utilization and may dismiss inadequate or defiled staples from being consumed counting conceivable arraignment of guilty parties. This is done to safeguard the soundness of individuals what's more, keep the interest of the milk drinking public (Felleke et al., 2010).

Milk quality indicators

Quality milk contains ordinary compound organization, totally liberated from infection causing microbes and destructive poisonous substances liberated from silt and incidental substances, have lower level of titratable acidity, has great flavor, adequate in saving quality and low in bacterial counts (FAO, 2010). It is additionally the lacteal discharge, for all intents and purposes liberated from colostrums, got by the total draining of at least one sound cows, five days later and fifteen days before parturition (U.S. Division of Wellbeing and Human Administrations, 1995) heat treatment in milk handling and should be dismissed (O'Connor, 1994).

Quality testing methods

1. Density and freshness of products

The density of milk, among others, is usually used for quality test mainly to check for addition of water to milk or removal of cream. Addition of water to milk minimizes milk density, while removal of cream increases it (O'Connor, 1994)

2. Organoleptic test

Testing milk for organoleptic characteristics is often called sensory testing and done using the normal senses of sight, smell and taste to know the overall quality. Organoleptic tests are sometimes employed to determine if certain type of food or pharmaceutical products can transfer tastes or odors to the materials and components, they are packaged in.

3. Clot-on-boiling test

It is one of the oldest test to determine too acidic milk ($\text{pH} < 5.8$) or colostrums, containing mastitis. It is known when the milk is changed to form a curd which means the milk must contain many acids, rennet producing microorganisms and colostrums shed from the cow as soon as the cow gives birth. Such milk cannot stand the heat treatment in milk processing and must be rejected (O'Connor, 1994).

4. Alcohol test

It is conducted to check the instability of the proteins occurring when the levels of acid increased and acted upon by the alcohol. Also, elevated levels of albumen (colostrums milk) and salt concentrates (mastitis) result in a positive test by curd formation (O'Connor, 1994).

5. Titratable acidity test

Titrate acidity is defined as a measure of freshness and bacterial activity in milk. When the milk is left for a while, the bacteria will proliferate by utilizing lactose to convert it to lactic acid, thereby increasing the acidity and decreasing the pH value. This acidity is said to be developed or real titrate acidity (O'Connor, 1994; Vishweshwar and Krishnaiah, 2005).

Overview of milk quality standards and regulation

In most dairy industrialized nations, milk quality is characterized by the degree of physical cells count (SCC) and the microbial heap of milk in the pre-sanitized mass tank. These are the critical parts of global guidelines set up for milk quality, under wellbeing and the predominance of clinical and subclinical mastitis in dairy groups (Fatine et al., 2012). Elevated degrees of SCC and microbial burden demonstrates unfortunate milk quality because of the reality that it contains diminished curd immovability and expanded fat furthermore, casein misfortune in whey. Besides, decrease of milk time span of usability, unfortunate homestead cleanliness, anti-infection buildups and the presence of pathogenic organic entities and poisons increment the microbial heap of milk. Issues of general wellbeing related with utilization of crude milk and conventional dairy items got from crude milk are normal in the agricultural nations (Makita et al., 2012). As the business continues to develop, much consideration should be paid on food handling measures to guarantee a protected and superior grade item for purchasers.

Quality regulation

Legislatures, from one side of the planet to the other, have set up different instruments for shielding their residents from food borne diseases to guarantee the financial advancement of their country. Milk quality guidelines have been managed by the individual Food and Medication Organization in the nations. Accordingly, the EU and USA regulations have been utilized as a typical measure of milk quality norms. Pretty much in Ethiopia then utilization of milk quality norm and guideline is similar world - wide. Guideline in the space of food quality and wellbeing assurance has been one the elements of administrative components laid out for issues that are challenging to be recognized by customers utilizing their sense of sight, smell, taste or contact while choosing or eating food sources (CAC, 2007). The obligation of food guideline in Ethiopia has been divided between Service of Wellbeing, Service of Farming and Provincial Turn of events, Service of Exchange and Industry, and Quality and Principles Authority of Ethiopia. Nonetheless, there has been unfortunate coordination and participation among these government administrative organizations towards carrying out quality guidelines set somewhere around the public authority. On top of this, the nation doesn't have a refreshed extensive food regulation that obviously characterizes and smoothes out the exercises of each administrative body.

Milk quality grading

In the United States, Grade A milk (fluid grade milk), top quality milk, refers to milk produced in the farms where sufficiently sanitary conditions have been fulfilled to qualify for fluid (beverage) consumption. Grade B milk is referred to as manufacturing grade milk that does not meet the fluid grade standards and can only be used in cheese, butter and nonfat dry milk. Grade C milk is the last grade milk which violates any of the requirements for grade B milk but is not subjected to adulteration (U.S. Department of Health and Human Services, 2011).

Economic benefits of food safety system and quality assurance

Sanitation assumes a critical part in the public economy and wellbeing by; safe watching the wellbeing of the country through better sustenance, improving public and global exchange, forestalling avoidable misfortunes at

pre/post-reap, diminishing general wellbeing costs by diminishing food borne sickness and diminishing product and exchange obstructions, bringing about nations becoming serious in the worldwide exchange (WHO, 2005).

CONCLUSION AND RECOMMENDATION

Milk is a protected and nutritious food that ought to be gathered, handled and took care of appropriately. Distinguishing wellspring of impurities in food creation and handling, as well as carrying out great creation practice, is very significant for guaranteeing purchasers' wellbeing. As milk leaves the cow, it is overwhelmed by lactic corrosive microscopic organisms. Be that as it may, during capacity pathogenic microscopic organisms presented from the climate can cause waste of crude milk. A gentle intensity therapy, for example, thermization can annihilate a large portion of the deterioration microbes. Drawn out openness of dairy item to intensity can annihilate the supplements in milk like nutrients and protein. In this way, information on the microbiological verdure of crude milk when different intensity therapies is fundamental for guaranteeing the wellbeing and nature of milk at utilization. Quality control measures have been progressed to give better devices to the assessment of various quality boundaries of milk at various phases of the creation. The accessibility of normalized techniques, as well as fit rules created by particular global organizations, has been fundamental to lay out technique for execution. To guarantee a legitimate nature of milk and its determined items, HACCP was proposed and applied in numerous nations as a precise preventive methodology and a proficient way to plan estimations to lessen dangers to a safe level. Excellent of milk is important for utilization and qualified for send out consequently contributing to the public economy through unfamiliar money. Consequently, dairy endeavors and limited scope ranchers ought to deliver quality milk at every creation stage so that they will be productive with appealing cost of their items and will be valued by the public authority for their critical commitment towards limiting the gamble of food borne ailments exuding from polluted milk also, milk items.

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