



Daffodil
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**PRODUCTION OF DAIRY PRODUCTS AND QUALITY
ASSURANCE CONTROL AT THE DHAKA DAIRY PLANT
(MILK VITA)**

An Internship Report By

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Submitted to the Department of Nutrition and Food Engineering in the partial fulfillment of B.Sc.
in Nutrition and Food Engineering

Supervised By

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FACULTY OF ALLIED HEALTH SCIENCE (FASH)

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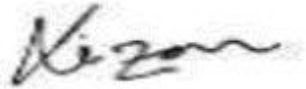
APPROVAL

This is to certify that **Al Sadman Hossain's** internship report titled "**Production Of Dairy Products And Quality Assurance Control At The Dhaka Dairy Plant (Milk Vita)**" holds the ID number 191-34-891 from the department of Nutrition and Food Engineering. Under my supervision, he completed his internship project, and the report he produced has been approved for presentation and defense/viva. I am pleased to be able to confirm that Al Sadman Hossain is the single creator of the report's contents and conclusions. He has a strong moral compass and an endearing action. Working with him has been a great pleasure, and we wish him the best in everything he undertakes.

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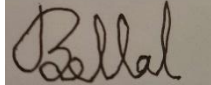
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DECLARATION

We finished this internship project under the supervision of **Professor Dr. Md. Bellal Hossain, Dean and Professor** of Nutrition and Food Engineering at Daffodil International University, and we therefore verify that information. We also confirm that no other institution has received this project or any portion of it with the objective to give a degree or diploma.

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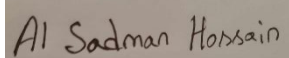
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I wish to extend my heartfelt appreciation to a range of individuals for their invaluable assistance and unwavering support throughout the duration of this project. Foremost, I extend my deepest gratitude to Almighty Allah, whose grace provided me the fortitude and opportunity to successfully complete this report within the stipulated deadline. I seize this moment to convey my gratitude to all those who have played a role in shaping my journey. My profound acknowledgement is owed to my parents, for their role in bringing me into this world and for being the foundation of my accomplishments. My aspirations and ambitions find their roots in their unwavering guidance and support. I am profoundly indebted to **Dr. Nizam Uddin**, the esteemed head of the Nutrition and Food Engineering Department, for his gracious collaboration and acceptance of this endeavor.

I would like to say my deep gratitude to Professor Dr. Md. Bellal Hossain, Dean and Professor of the Faculty of Allied Health Sciences at Daffodil International University, for his continuous supervision and direction throughout my organizational attachment. I am grateful for his constant support. Furthermore, I am grateful to Dr. Khandaker Md. Aminul Islam, the Addl.GM (Technical and Production) of Dhaka Dairy Plant, for allowing us to complete our internship at his facility. I would also want to thank Mr. Mukbol Hossain, the Production Supervisor, for his valuable help and advice during this internship term.

The production manager reports directly to me. Without their help, finishing this report would have been next to impossible.

Please accept my sincere appreciation for the countless hours of instruction and support provided by the Nutrition and Food Engineering teachers and staff.

Finally, I'd want to show my deepest appreciation to Dr. Khandaker and Addl.GM (Technical and Production) Md. Aminul Islam.

EXECUTIVE SUMMERY

Milk-vita, or the Bangladesh Milk Producers Co-operative Union Limited (BMPCUL), is the primary government agency responsible for distributing milk and milk products in Bangladesh. Based on my two months of internship at BMPCUL, I have written the following report. This internship experience has instructed me many things about the dairy industry and its products.

This report has been carefully developed with the knowledge and expertise I earned all over my time at the organization. While my employer has many departments and divisions, my experience has primarily been in manufacturing and quality assurance. This document gets into the complicated nature of raw milk and milk product features, as well as processing insights. Notably, the project is an agreement between the government of Bangladesh and the Bangladesh Milk Producers Co-operative Union Limited, ensuring the provision of high-quality products. The fundamental dedication to providing true, and high-quality goods remains a cornerstone. Internship opportunities abound within the limits of Bangladesh Milk Producers Co-operative Union Limited (BMPCUL). The search for of superior-quality milk and dairy products is central to this report, with a strong emphasis on improving production procedures and product quality. Significantly, the customer's voice is paramount within the framework of Bangladesh Milk Producers Co-operative Union Limited (BMPCUL).

My analysis is based on BMPCUL's procedures for producing and ensuring the quality of dairy products. The report's first section is dedicated to background material on the company. The raw milk analysis and quality indicators are included in the report's second section. Dairy product manufacturing is covered in the third section of the report. The conclusion is included in the final section. The findings of this study are quite significant.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

A common food in our nation is milk. Milk is a favorite food of adult children. Mammary glands of mammals are the main source of milk. To create raw milk, cows, goats, and buffaloes are employed. We purchase milk in the local market; some people grow cows, goats, and buffaloes and gather their milk to sell there. Some businesses started introducing packaged milk into supermarkets a few years ago. Packaged milk is now frequently available on the market thanks to numerous food firms. One of them is milk vita, a product of Bangladesh Milk Producer Cooperative Union Limited (BMPCUL). Delivering milk in packaged form of the finest quality is this company's major objective. This enterprise begins by gathering raw milk on her own farm. Later, this company uses a cooperative union to collect milk from the village market. After that, this corporation gave raw milk to her quality control manager. Then, in order to satisfy the consumer, gather the milk reserve tank and milk vita focus. They don't want to earn as much money as other companies do.

1.2 Definition of Milk

Milk, a white liquid produced by female mammals' mammary glands, provides nutrition to their infants from the moment they are born. Milk has a wide range of vital elements because it is an emulsion of proteins, lipids, vitamins, minerals, and carbohydrates, particularly lactose, suspended in water. Milk contains all of the essential amino acids that the body need.

1.3 Origin of The Report

This internship report was written by a Daffodil International University student studying nutrition and food engineering. I've just finished my eleventh semester as a senior. Our department offers internship possibilities with some food companies during the current semester, which is also our internship semester. In Dhaka, I'm undertaking an internship at Milk Vita.

1.4 The Internship Program's Objectives are as Follows:

- ❖ To encourage professionalism among students
- ❖ To get knowledge about various dairy products
- ❖ To fulfill the genuine requirements of the NFE department
- ❖ Feel the atmosphere in which they work.
- ❖ Acquire knowledge of manufacturing and quality assurance.
- ❖ Gain knowledge of useful websites

1.5 The Goal and Scope

In this study, the author mainly discusses the pasteurization, preparation, and packaging processes involved in her company's processed milk production and quality control. And we're in a great position to develop the Milk vita business.

1.6 Restrictions on the Report:

- ❖ Due to their company's restrictions on the quality control department, I am unable to access some information. They don't have much data in their QC section.
- ❖ Their inquiry on quality control has not received a response.

CHAPTER 02

OVERVIEW OF ORGANIZATION

2.1 History of The Company

M. Mukhlesur Rahman established the establishment of a dairy plant in Lahirimohanpur , Bangladesh, capable of manufacturing 2,000 liters of milk per day, in 1946. In 1952, the company's name was changed from Eastern Milk Production Limited to reflect its transition to private ownership. In 1977, the brand name was changed to "MILK VITA," signifying a significant change. Bangladesh Milk Producers Co-operative Union Limited dates back to 1973, when the Bangladesh government established it under the name Milk Vita. The Milkvita Company was established in Sirajgong in 1977 and has since become synonymous with premium dairy products. Notably, Milk Vita's collection of raw milk focuses on its prized cow plant, demonstrating a commitment to superior milk sourcing.

2.2 Background of This Company

The Bangladesh Milk Producer Co-operative Union Limited is the owner of Milk vita, an established brand all over the country. The visionary founder, M Mukhlesur Rahman, established the company in 1946 in Lahirmohanpur (Sirajgong), with a daily production capacity of 2,000 liters. The company restored to private ownership in 1973, a change that its previous the owner had initiated in 1952. In 1977, however, the Bangladesh government assumed ownership and rebranded the company, formerly known as the Eastern Milk Company, as Milk-vita. As a result of this transformation, the company spread its operations by establishing facilities in numerous industries and regions. Milk vita's headquarters are located in Dhaka's Mirpur Sector 7 and function as a central hub. Milk vita has an impressive 70% market share of the liquid milk market in Bangladesh. A 2016 government report highlighted instances of private milk producers imitating Milk Vita's packaging, providing further evidence of the brand's impact.

2.3 The Company's Goal

- ❖ The company's principal goal is to provide their product to people in rural areas.
- ❖ Enhanced dietary quality
- ❖ Enhanced quality packing
- ❖ Enhancing the reliability and dependability of their product
- ❖ Making sure your clients are happy
- ❖ With the goal of reducing unemployment,
- ❖ Maintain a positive mood within the office.
- ❖ Preventing the Spread of Adulteration

2.4 Products and Services

Milk pasteurized, Chocolate-flavored milk , Powdered milk , Gee , Matha , The butter, La Ban , Delicious Yoghurt, Souring Yogurt, Chocolate Ice Cream , Vanilla Cup Ice-cream



Figure 2.1: Products of Milk Vita

CHAPTER 03

DESING OF STUDFY

3.1 Study Area

There are two separate areas in the study area:

- ❖ Production Area
- ❖ Laboratory space

3.2 Production Area

In the factory, raw materials undergo various processes to become finished goods. This region, which is where the grain is loaded onto trains, is full of numerous machinery, and is divided into several "blowing" sectors.

Storage Space: This is where we keep finished goods, raw materials, and unused space.

Mixing Area : This space is utilized to blend several products together, such as Labang , Matha , etc.

Processing Area: Harmonizing the mixing chamber Time spent in the processing area is invested in activities like the pasteurization of milk.

Freezing Area : The freezing section is where a wide variety of products are kept until they are ready to be sold.

3.3 Laboratory Area

- ❖ Various tests are conducted in the lab. There are two different forms of product testing: one for the raw product, which includes the fat test, CLR test, SNF test, and platform test; and another for the product that is ready for production, which includes the fat test, CLR test, platform test, and BSTI standard.
- ❖ To make sure the product's high quality and safety for the consumer, it is subjected to a battery of tests at an advanced laboratory that offers a comprehensive array of testing instruments. They also use their lab to test and refine their products.

CHAPTER 04

PROCESSING SECTOR

4.1 Pasteurization Milk

Pasteurization is a meticulous procedure involving the controlled heating of milk to a designated temperature over a predetermined duration. This meticulous process serves the critical purpose of eradicating detrimental bacteria that have the potential to trigger diseases such as listeriosis, typhoid fever, tuberculosis, diphtheria, and brucellosis, thereby enhancing the safety of the milk supply.

Pasteurization Milk Processing Step

- ❖ Gathering all the raw milk is the first stage.
- ❖ After collecting raw milk and storing it in a reserve tank, samples are sent to the lab for testing on a variety of platforms, including fat, alcohol, homogenization, and more.
- ❖ Milk that has passed its inspection is put into cold storage (40 degrees Celsius).
- ❖ After that, the milk is mixed once more to preserve the fat content (which must be at least 3.5% according to the BSTI). The BSTI reports that when water is added to raw milk with too much fat, the fat percentage drops to 3.5%.
- ❖ Recombined milk is subjected to a 15-second pasteurization process between 80 and 850 degrees.
- ❖ If the collected raw milk is low in protein or fat, additional milk is added to maintain the proper ratio, or full-cream milk is substituted.



Figure 4.1 Reserve tank

Milk Homogenization

- ❖ After the milk has been pasteurized, it is homogenized in a homogenizer.
- ❖ The milk is chilled to 40 degrees Celsius.
- ❖ Once it has cooled, the milk is stored for later use.
- ❖ When fats are homogenized, the molecules are spread out in a uniform fashion.
- ❖ The nutritious content of milk is not altered and no chemicals or additions are used in the homogenization process.
- ❖ After being stored in a vat, milk is transferred to a packaging machine.



Figure 4.2 : Milk Homogenization Processing Machines

Milk Packaging

- ❖ Pasteurization is followed by sending homogenized products to the packaging business.
- ❖ Milk packaging machines allow for the industrial packaging of a wide range of milk amounts.
- ❖ Milk is removed from the packaging industry if any problems are discovered.
- ❖ Good grade full storage facilities are available following the selection of milk.
- ❖ After being packaged, the milk is transported to cold storage chambers, where it is kept between 0 and 4 degrees Celsius.



Figure 4.3 :- Milk Packaging Machine

Figure 4.4 :- Milk Storage Room

4.2 Ingredients of Chocolate Milk

Milk-vita also engages in the production of chocolate milk, a delightful concoction blending conventional milk with cocoa powder. This delightful treat holds a special appeal among the youth, particularly adored by children in Bangladesh.

Ingredients : FCMP , Sugar , SMP , Stabilizer, Cocoa powder, Color , Water

Processing step of Chocolate Milk:-

- ❖ The pasteurization process involves the application of continuous heat to the prepared mixture. This process begins by filling the mixing vat with water heated to approximately 60°C, followed by the addition of sugar, FCMP (Full Cream Milk Powder), SMP (Skimmed Milk Powder), food color, chocolate flavor, cocoa powder, stabilizer, and water. Subsequently, these ingredients are skillfully blended together, culminating in the final product.
- ❖ Homogenization followed by pasteurization in cold water kills any potentially harmful germs.
- ❖ After the combination has been prepared, it is packaged and stored at temperatures between 0 and 4 °C.



Figure 4.5 : Chocolate milk

4.3 Ice -Cream

Ice cream is a frozen dessert made by combining milk, sugar, and flavorings and then freezing the mixture while stirring it. Egg products, stabilizers for a uniform texture, emulsifiers to maintain a homogenous mixture, and other components derived from non-milk sources may also be present.



Figure 4.6 : Ice - Cream

Ingredient : Sugar , Butter , Flavor , SMP, FCMP , Stabilizer, Water- All the rest



Figure 4.7: Ice-Cream

Processing Step of Ice - Cream :-

- ❖ After filling a mixing vat with hot water at roughly 60°C, the following ingredients are added in purchase: FCMP, SMP, sugar, food coloring, cocoa powder, chocolate flavor, stabilizer, and water. After mixing these ingredients well, turn on the pasteurizer for 15 seconds at 81 degrees Celsius to begin the pasteurization procedure.
- ❖ After pasteurization, the mixture is chilled with hot water to destroy the better before homogenization with a homogenizer.
- ❖ The mixture was then cooled to 4 degrees Celsius (the age process), which is normally carried out at 5 degrees Celsius for 3 to 40 hours. Ice cream is a procedure that takes longer than that.
- ❖ Then, after filling it with ice cream, freeze it at -50 degrees Celsius.
- ❖ After one hour, the mixture is placed in the hardening room, which is kept at -20 oC.
- ❖ The marketed combination or ice cream is then stored in a room with temperatures ranging from -4 to -20 degrees Celsius.

4.4 Sweet Yoghurt :- Yogurt with a sweet flavor is very popular. It's popular with the young and the children in love. This is especially true of the elderly. Milk-vita also produces a delicious yogurt.

Ingredients : Milk , Sugar , Culture



Figure 4.8 :- Sweet Yoghurt

Processing step for Sweet Yoghurt :-

- ❖ First, milk is collected in sterile containers so that a delicious yoghurt can be made.
- ❖ The milk is then brought to a boil and its weight is decreased by around 40%. When the milk was almost at a boil, 15 percent sugar was added.
- ❖ At this stage, with the milk's temperature at 80 degrees Celsius, it was well blended.
- ❖ It was then time to chill the milk. And we see a 40 degree dip in temperature.
- ❖ The temperature is increased to 40°C once the culture has been added.
- ❖ After that, the ingredients were left alone for 8 hours to allow the milk to curdle.
- ❖ The solidified liquid is refrigerated at 4 degrees Celsius. The curd can be kept in the plastic container.
- ❖ The curd is then placed in a refrigerator or freezer until it is ready to use.



Figure 4.9: - Yoghurt Storage Room Temperature 4°C

4.5 Sour Yoghurt :-

Ingredients : Yoghurt :- Milk , Sugar , Culture



Figure 4.10 :- Sour Yoghurt

Processing Step Sour Yoghurt:-

- ❖ First, sour yoghurt is poured into sterile containers, and then skim milk is blended together. Then, we combined them at filling temperature and stirred.
- ❖ After that, let it cool to between 40 and 45 degrees Celsius for a while.
- ❖ After waiting 4 hours due to coagulation, starting culture was added to the cold mixture.
- ❖ Four hours before coagulation, place the mixture into a plastic jar.
- ❖ Refrigeration is required for long-term storage of yogurt after it has coagulated.



Figure 4.11 :- Sour Yoghurt fill in the Plastic Container

4.6 Labang :- It's a drinkable yogurt that you might also know as a dairy product. It occurs worldwide, but mostly in South Asian countries. Milk-Vita's Laban features 80% yogurt.

Ingredient : Sour curd , Salt , Treated water, Propagated culture, Sugar , Xanthan gum

Procedure step for Labang

- ❖ Labang is made by first adding sour yogurt or curd to a mixer.
- ❖ Then, they put in the salt and sugar.
- ❖ Once it has stabilized and been added, you may begin mixing.
- ❖ The stabilizer was applied after the curd had been well blended for an hour.
- ❖ The labang can be prepared after the curd has been fully mixed.
- ❖ After the labang has been frozen for 24 hours, it is removed from the jar and served.



Figure 4.12 :- Filling Labang with jar

4.7 Matha :- It's a drinkable yogurt that you might also know as a dairy product. It occurs worldwide, but mostly in South Asian countries. Matha relies on Milk-Vita for 80% of its yogurt needs.

Ingredient : Water, Sugar, Sour curd , Salt, Bit salt , Propagated culture , Xanthan gum

Processing step of Matha :-

- ❖ Put sour curd into the blender first.
- ❖ After waiting an additional 1 hour, sugar, salt, and xanthan gum were added and the resulting curd was thoroughly blended.
- ❖ The propagating culture and water were added and stirred for 1 hour before the bit salt was added.
- ❖ Then, Matha is kept in a cold storage freezer for a whole day.
- ❖ After getting everything set up for the Matha and filling the bottle, you can put it away.



Figure 4.13 :- Fill the Matha with Bottle

4.8 Roshgolla :-

Ingredient : Curd / Yoghurt , Water , Sugar , Green Cardamom

Processing step for Rosh Golla :-

- ❖ First, fill some clean containers with curd.
- ❖ After filling the vessels, carefully shape them.
- ❖ The next step is to form the dough into little balls using the flour.
- ❖ And to make sugar syrup, put water, sugar, and green cardamom in a cooker and heat until the sugar has dissolved and the syrup has thickened. This syrup should have a thick consistency.
- ❖ Then, marinate each ball for a few hours in the syrup. Next, let the temperature drop.
- ❖ Next, make the rosh golla, wrap them in plastic, and store them in the freezer.



Figure 4.14 :- Packaged the Rosh Golla

4.9 Rosh Malai :-

Ingredients: Baking powder , Flour , Curd , Green Cardamom, Syrup



Figure 4.15 :- Rosh -Malai

Processing step for Rosh Malai:-

- ❖ At first, a dough is made by combining baking powder with undiluted curd. To make the dough more manageable and conducive to shaping into desirable sweets, some flour is added.
- ❖ The tiny sweet balls are then soaked for several hours in syrup
- ❖ Separating the syrup from the sugary bites during the milk's reduction to half its original volume.
- ❖ Hot milk is used to coat the sweet balls.
- ❖ The addition of green cardamom enhances the flavor.
- ❖ After that, nobody lost their temper.
- ❖ The chilled rash-malai is then transferred to a 1 kilogram box.
- ❖ After being packaged, they are held in the warehouse until they are ready to be sold.

CHAPTER 05
(PHYSICAL & CHEMICAL TEST)
MILK VITA

5.1 Alcohol test / Platform test

Apparatus :- Pipette , Test tube

Reagent :-

- ❖ Ethanol

Procedure for milk platform test :-

- ❖ With just 2 milliliters of ethanol at beginning, 68% of people agree to it. Using a 5 ml pipette, transfer to the test tube.
- ❖ Afterward, 1 cc of milk was poured into the container.
- ❖ Then, shake the test tube vigorously for a few seconds. Try to spot any coagulation as well.
- ❖ Alcohol causes coagulation and stability in milk when tested in a test tube.
- ❖ In addition, the lack of coagulation in the body of the test tube provides evidence that alcohol is absent.



Figure 5.1 :- Platform test in milk

5.2 Fat Test

Apparatus :- Butyro meter , Pin , Knock stop , Centrifuge machine , Pipette

Reagent :- Amyl Alcohol , Sulfuric acid

Procedure for Fat test :-

- ❖ Get The a butyro meter and ten milliliters of sulfuric acid. Fill the butyrometer with the sulfuric acid.
- ❖ Then, you'll need to provide a sample. A milk sample of 10.75 ml is inserted into the butyrometer.
- ❖ To the mixture, add 1 mL of amyl - alcohol and stir to combine.
- ❖ The mixture was moistened with a few drops of water.
- ❖ Stop the knocking by pinning the butyrometer shut.
- ❖ The ingredients are then mixed vigorously by hand for a few seconds.
- ❖ After shaking the ingredients together, centrifuge the butyrometer for 5 minutes at 60 degrees Celsius and 1200 revolutions per minute.
- ❖ After 5 minutes, remove the butyrometer from the centrifuge and read the contents directly from the instrument's meter.
- ❖ The butyrometer scale indicates 3.2–4.2% fat, but the actual rate of fat% is 3.5.



Figure 5.2 :- Butyrometer

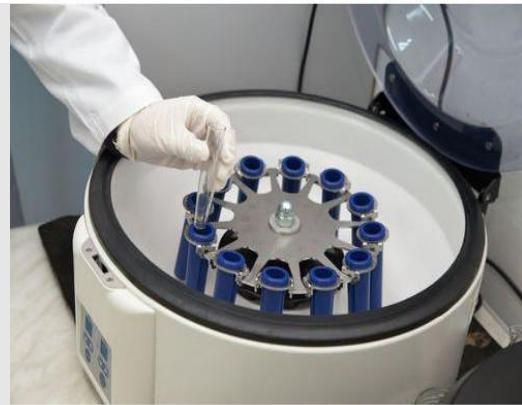


Figure 5.3 :- Centrifuge Mach

5.3 CLR Test / Density Measurement

Apparatus :- Lactometer jar , Lactometer with thermometer

Procedure :-

- ❖ To begin, clean the lactometer jar.
- ❖ After that, the lactometer was inserted in the jar.
- ❖ The water is then added to the jar and the temperature is adjusted.
- ❖ After a few minutes, take a temperature reading and double-check the lactometer's reading.
- ❖ Then calculate the CLR.



Figure 5.4 :- CLR/Density Measurement Test

5.4 Clot on Boiling test

Apparatus :- Water bath / Bunsen burner , Test tube

Procedure of clot on boiling test :-

- ❖ The first step is to clean a test tube. Then, add 2 milliliters of the milk specimen to the test tube.
- ❖ After that, you'll need a Bunsen burner and a water bath to heat up the test tube.
- ❖ After that, you put the test tube on the Bunsen burner for about five minutes.
- ❖ The subsequent test tube was taken off the Bunsen burner after being heated for four to five minutes.
- ❖ Check out the precipitation by rotating the test tube.

5.5 CIP Test :- Clean in Place

Procedure :-

- ❖ . The entire manufacturing area, including the vat, tanker, and pipe, was cleaned with regular water in just 10 to 15 minutes.
- ❖ The entire production area, including the vat, tanker, and pipe, is then washed down with hot water for another ten to fifteen minutes.
- ❖ After adding caustic soda to the hot water, another 15 minutes were spent cleaning the pipe, vat, and tanker.
- ❖ Production area, pipe, vat, and tanker all made use of the pure sodium hydroxide (caustic soda).
- ❖ Last but not least, a tanker is used to collect water for CIP testing.
- ❖ The phenolphthalein indicator was employed in water quality testing.
- ❖ If the water is pink, then the CIP is increasing. And the absence of hue denotes a negative CIP.

5.6 Peroxidase Test

The peroxidase test is administered to verify the efficacy of pasteurization of milk.

Equipment: Test tubes , Pipette , Sodium hydroxide , Hydrogen peroxide, Paraphenylenediamine

Procedure :

- ❖ The first step is to collect 5 ml of milk in a test tube.
- ❖ The test is shaken with one drop of sodium hydroxide added.
- ❖ Then, you add 1 drop of hydrogen peroxide and shake the mixture carefully.
- ❖ The mixture is then agitated for a few seconds after 2 drops of paraphenylenediamine have been added.
- ❖ The next color change will occur after 30 seconds.
- ❖ When the blue color of peroxidase positivity appears,



Figure 5.5: Peroxidase negative (White color) & Positive (Blue color)

5.7 Soda Test

Equipment : Test tube , Pipette

Reagents: Ethanol , Rosalic acid

Procedure:

- ❖ First, a test tube is filled with 2 cc of pure alcohol.
- ❖ Two milliliters of milk are mixed in.
- ❖ Add 2 ml of rosalic acid.
- ❖ Take note of the colour.
- ❖ The presence of a rose-red, brownish, or brick-red hue in a soda sample indicates a favorable result.

- ❖ Appearance of orange color means soda negative.



Figure 5.6 : Soda Positive



Figure 5.7 : Soda Negative

5.8 Salt Test

Salt is added to milk in order to enhance its SNF value, hence a salt determination is performed.

Apparatus : Test Tube , Pipette , Dropper

Reagent : Silver Nitrate (AgNO_3) , K_2CrO_4

Procedure :

- ❖ The first step is to collect 2 ml of silver nitrate in a test tube.
- ❖ K_2CrO_4 is added, around 4–5 drops.
- ❖ Then, two milliliters of milk are added.
- ❖ The presence of yellow in a salt test indicates a positive result.
- ❖ If the salt test turns out to be negative, the color will be brown or there will be no change.



Figure 5.8 : Salt Positive

5.9 Sugar Test

Some dishonest people are boosting the milk's density by adding sugar on purpose. The quality assurance division therefore performs this inspection.

Equipment : Test Tube , Test tube holder , Bunsen burner , Pipette

Reagents : Resorcinol solution

Procedure :

- ❖ First, a test tube is filled with 5 ml of resorcinol solution.
- ❖ Next, a sample of milk, 1 ml, is added into the test tube.
- ❖ When milk was combined with resorcinol solution, the result was a coagulated mass.
- ❖ To keep from dropping the test tube into the flaming Bunsen burner, a holder is utilized.
- ❖ While waiting for the test tube to boil,
- ❖ As soon as feasible, the test tube is taken away from the flame and cooled.
- ❖ If a blood sugar test becomes a bright red, it's a positive result. A negative result for sugar indicates a faint red color.
- ❖ Milk that tests positive for sugar should be discarded.



Figure 5.9: Sugar Positive

5.10 Micro-Biological Test

Finding out how many bacteria are present in milk and other dairy products is crucial. Because E. coli and other germs can contaminate milk and make it unsafe to drink. Milk contaminated with harmful levels of E. coli can make people sick. The overall number of microorganisms is somewhere between 35,000 and 40,000. Dysentery is caused by E. coli. Another factor of worry is the presence of coliform bacteria.

Coliforms are characterized by :

- ❖ Gram-negative bacteria.
- ❖ A bacterial community
- ❖ Rod-shaped microorganisms
- ❖ CO₂ Gas producer
- ❖ In soil, their output increases quickly.
- ❖ The permissible range is 10/ml

Procedure :

- ❖ First, a ringer solution is prepared by mixing together water and a salt (such as sodium chloride, potassium chloride, calcium chloride, etc.).
- ❖ Finally, the solution is diluted in a test tube.
- ❖ The solution is brought to a boil, at which point the heat is removed and it is allowed to cool.
- ❖ Each time a sample is taken from a vial and placed in a petri dish, the pipette is sterilized under a spirit lamp.
- ❖ One milliliter of milk is used to test for coliform bacteria and two milliliters are used to test for total One milliliter of the diluted solution is added to one milliliter of the ringer solution.
- ❖ Then, a pipette is used to transfer 1 ml of the solution into a petri plate.
- ❖ Finally, the sample is transported to a petri dish containing red agar for coliform but testing.
- ❖ To promote bacterial growth, red agar is applied twice.
- ❖ The petri dishes are then incubated in a warm environment (between 40 and 42°C) for 16 to 18 hours.
- ❖ After an incubation period, the number of germs can be seen with the naked eye.
- ❖ To figure out how many bacteria are in a sample, split the petri dish into four parts, count one part, multiply it by four, and then multiply that number by 100.
- ❖ However, coliforms are measured in colonies.

CHAPTER 06 RESULT AND DISCUSSION

6.1 Platform test / Alcohol test of milk

Milk coagulates when the alcohol content is positive, and it does not coagulate when the alcohol content is negative.

Alcohol positive (+) = Coagulation Milk

Alcohol negative (-) = No Coagulation on Milk

Milk Vita takes the raw milk from her farm and analyzes it for alcohol, thus the results are always negative. Then, gather the milk to explain how breathalyzers never show any signs of intoxication.

6.2 Fat test of milk

- ❖ In the Milk Vita quality control room, we put a sample of milk through the fat test.
- ❖ The butyrometer reading comes in at 3.4% fat.
- ❖ We are familiar with the 3.5% fat limit set by the BSTI.
- ❖ Milk with a fat percentage of less than 2% is considered substandard and must be discarded; however, some animals found fat contents between 3.2% and 4.2%.

6.3 CLR Test Or Density Measurement

On Milk Vita The specific gravity of the sampled milk was 1.0286, indicating that it included no additional water. Milk specific gravity, or between species. The typical gravity (density) of cow's milk is 1.028–1.030, while that of buffalo's milk is 1.030–1.032. Dishonest people thicken milk by adding sugar and flour.

6.4 Clot on Boiling test of milk

- ❖ The presence of lactic acid in milk at 0.22% after boiling is indicative of a positive test.
- ❖ As a result, less than 0.22% of milk is utilized in the milk processing industry. If the percentage is less than 0.22%, the milk is considered unfit for further processing by Milk Vita.

6.5 CIP (Clean in place)

- ❖ When after the test we see the water color is pink, that's mean test is positive.
- ❖ When after the test we see the water color no change that's mean test is negative.

C. I. P Positive (+) = Pink color in water

C.I.P Negative (--) = No color in water

- ❖ The milk vita every time CIP is negative we see, because her employee are very carefully to clean the apparatus.

6.6 Peroxidase Test

Peroxidase Positive (+) = Blue color

Peroxidase Negative (-) = White Color

Peroxidase was consistently positive in milk-vita. Milk that tests positive for peroxidase must be discarded for further processing.

6.7 Soda Test

Soda Positive (+) = Red rose or Brick red color

Soda Negative (-) = Orange color

The milk-vita soda test resulted in a negative result. Dishonest people purposefully add soda to milk to increase the froth. Milk containing soda must be rejected.

6.8 Salt Test

Salt Positive (+) = Yellow color

Salt Negative (-) = Brown color

Milk-Vita tested negative for salt. Adulterated milk is defined as milk that tested positive for salt. Milk that has tested positive for salt must be refused. To raise milk's SNF level, salt is added to it.

6.9 Sugar Test

Sugar Positive (+) = Brick red color

Sugar Negative (-) = Slightly red color

In milk-vita The sugar test was always negative. Sugar-sweetened milk is tainted milk. Dishonest people purposefully add sugar to milk to enhance the carbohydrate level. It also contributed to the density of milk.

6.10 Microbiological Test

The recorded total bacterial count stood at 18,000 per milliliter. Acceptable standards range between 30,000 and 35,000 total bacterial counts per milliliter. Simultaneously, the colony count was registered at 8 per milliliter, aligning with the acceptable range as stipulated by standards, which mandates a coliform count below 10 per milliliter. Thorough and effective pasteurization serves as a vital step in neutralizing these microorganisms. This action holds immense significance, as these microorganisms carry potential harm upon consumption, being causative agents for numerous human diseases.

CHAPTER 07

CONCLUSION

I am very grateful to have the chance to participate in this internship program. I learned a lot from this training. In addition, I had a wide range of experiences with dairy products. Since I started working there, I've been trained in manufacturing as well as assurance. About manufacturing and quality assurance, I had discussions with top experts and corns.

This training will be valuable to me since I learn about dairy product adulteration testing, pasteurized milk processing, ice cream, labang, matha, yoghurt, and other topics. As part of this internship program, I also did a lot of field work or practical work. This program's information and experience will be useful or advantageous in my future life or profession

