



An Internship Report
On
“Quality Control Assurance & Production of Dairy Products
At Dhaka Dairy Plant (Milk-vita)”

Submitted To:

Prof. Dr . Md. Bellal Hossain

Head

Department of Nutrition & Food Engineering

Daffodil International University

Submitted by

Jannatul Ferdous

ID: 151-34- 345

Department of Nutrition and Food Engineering

Daffodil International University

Date of Submission’

22th December 2018

LETTER OF TRANSMITTAL

22th December 2018

Prof. Dr. Md. Bellal Hossain

Head

Department of Nutrition and Food Engineering
Daffodil International University.

Subject: Submission of Internship Report.

Dear Sir,

I would like to take this opportunity to thank you for the guidance and support you have provided me during the course of this report. Without your help, this report would have been impossible to complete.

To prepare the report I collected what I believe to be most relevant information to make my report as analytical and reliable as possible. I have concentrated my best effort to achieve the objectives of the report and hope that my endeavor will serve the purpose. The practical knowledge and experience gathered during report preparation will immeasurably help in my future professional life. I request you to excuse me for any mistake that may occur in the report despite of my best effort.

I would really appreciate if you enlighten me with your thoughts and views regarding the report. In addition, if you wish to enquire about an aspect of my report, I would gladly answer your queries. Thank you again for your support and patience.

Yours Sincerely,

Jannatul Ferdous

ID-151-34-345

Department of Nutrition and Food Engineering

Daffodil international university

Letter of Authorization

22th December 2018

Prof. Dr. Md. Bellal Hossain

Head

Department of Nutrition and Food Engineering

Daffodil International University.

Subject: Declaration regarding the validity of the Internship Report.

Dear Sir,

This is my truthful declaration that the “Internship Report” I have prepared is not a copy of any internship report previously made by any other students.

I also express my honest confirmation in support to the fact that the said internship report has neither been used before to fulfil my other course related nor it will be submitted to any other person in future.

Yours sincerely,

Jannatul Ferdous

ID-151-34-345

Department of Nutrition and Food Engineering

Daffodil International University

Approval Certification

This is to certify that Jannatul Ferdous bearing ID-151-34-345 , Program B.Sc. in Nutrition & Food Engineering is a regular student department of Nutrition & Food Engineering Faculty Allied health Science Daffodil international University. She has successfully completed her internship work report of 1.5 months 1st October 20th November , 2018 of Milk-Vita at Mirpur, Dhaka, Bangladesh under my direct report is a worth of fulfilling the partial requirements of NFE program.



Daffodil
International
University

Supervisor

A handwritten signature in black ink, appearing to read 'Bellal', with a long horizontal line extending to the right.

.....

Prof. Dr. Md. Bellal Hossain

Head

Department of Nutrition and Food Engineering

Daffodil International University

ACKNOWLEDGEMENT

In the preparation of this report, I would like to acknowledge the encouragement and assistance give to me by a number of people. At first, I would like to express my gratitude to my creator the almighty Allah for enabling me the strength and opportunity to complete the report in time successfully. I am grateful to each and every people who are involved with me in every phase of my life.

I am grateful to my parents without whom I cannot be here. Without the support of my parents, I could not be able to achieve my objectives and goals.

My Deep gratitude and sincere thanks to the Honourable Dean, Faculty of Allied Health Science, **Professor Dr. Ahmed Ismail Mostafa** for his kind cooperation and to accept this Degree.

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Finally,I wish to express immense gratitude & humbly convey my heart felt respect to Managing Director **Dr.Khondokar Aminul Islam** .

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CHAPTER ONE

INTRODUCTION

Milk is an ideal food for all kinds of mammals. Milk comes from mammary glands of mammals. Normally raw milk of cow and goat in local market, but processed milk are found in market as packaged milk.

Nowadays a number of milk producer companies are available in Bangladesh. Bangladesh Milk Producers Co-operative Union Limited (BMPCUL) or Milk-vita is one of them. Their purpose is to serve good products to customers.

Milk-vita collect milk from local village or market by co-operative union. Before collecting, they test the quality of milk by their experts. Then they transport collected milk to their all milk processed plant. But before sending them, they chilled their collected milk for ensuring quality of milk.

Bangladesh Milk Producers Co-operative Union Limited (BMPCUL) or milk vita serve pure products. Their purpose is to consumer satisfaction.

1.1 Definition of Milk

The lacteal secretion, practically free from colostrum obtained by the complete milking of one or more healthy cows, which contains not less then 3.50% of milk fat and not less then 8.25% milk solids not fat.



1.1 Figure: Milk

1.2 Source of the Report

Internship program is a graduation requirement for Nutrition And Food Engineering (NFE) students. Daffodil International University and department of NFE provide

Internship opportunity for students in different company and sectors. Its main purpose is to give the students knowledge about practical experience and real work place. It gives an opportunity to get closer to job seekers.

The study and internship program have following purposes:

- To come out from textbooks and learn about real world
- To learn about competency and efficiency of real work environment
- To help students to express dependability, initiative and professionalism and tasks they are assigned
- To get closer contact with job seekers
- To fulfill the requirement of NFE Program
- To compare the real scenario with the lessons learned in DIU
- To know about Milk-vita
- To learn about production and quality control of dairy products
- To learn different types of dairy products

This report is the result of two months long internship program conducted in Bangladesh Milk Producers Co-operative Union Limited (BMPCUL) is prepared as a requirement for the completion of the NFE program of Daffodil International University. As a result I need to submit this report based on the “Quality control Assurance and Production of Dairy products at BMPCUL.

1.3 Objective of the Study

Objective study is divided into two types.

- General Objective.
- Specific Objective.

General Objective:

- The main objective of this study is to learn production and quality control of milk & milk products
- To fulfil the Bachelor of Nutrition & Food Engineering degree requirement of Faculty of Allied Health Science of Daffodil International University.

Specific Objective:**More specifically contains:**

- ✓ To focus on the hygienic production and quality control of Dhaka Dairy Plant (Milk-vita)
- ✓ To have an idea of activities Bangladesh Milk Producers Co-operative Union Limited (BMPCUL)
- ✓ To know different activities of this organization
- ✓ To give an overview of Bangladesh Milk Producers Co-operative Union Limited (BMPCUL)

1.4 Scope of the study

Through extensive discussion this report has been prepared. The main intention of this study is the Production and Quality Control of Milk & Dairy Products compositional standard and quality and processing of dairy products by the Dairy Products Producers Company. The report covers Details about the Production and Quality Control of Dairy Products under Hygienic Condition. However, I got an opportunity to work in both Production & Quality Control Assurance Department.

1.5 Methodology

A systematic procedure is Requires for the preparation of the final report. Methodology starts from selection of topic, data source, interpreted results in a systematic manner and key points are to be found out. The overall process of methodology are as follows:

Selection of the topic:

The selection of the topic for any research is very important. It depends on gained knowledge and on-practical experience from the assigned organization.

Source of data:

Essential data can be collected from both primary and secondary source.

Primary Source of data:

- Primary data collected from the practical work
- Data collected from employee

Secondary Source of data:

- From official and officers of the organization
- From newspaper, journal, articles etc.
- Different websites related to dairy science
- From manuals and files of the organization

Tools Used:

Some arithmetic, graphical tools are used in this report for analyzing the data and to classify different types of data.

1.6 Limitations of the report:

Every report have some limitation so my report have also some limitation. These are given below:

- Due to some limitation some information, especially from ultimate employees could not be collected
- Due to some rules and regulation they did not give me some information because that is against their policy
- All of them was not filled up the feedback properly which cause insufficient of data
- Due to insufficient time they was unable to give me many information.

CHAPTER-TWO

OVERVIEW OF THE ORGANIZATION

2.1 Historical Background of the Company

Bangladesh Milk Producers Co-operative Union Limited (BMPCUL) known by its brand name Milk-vita was first introduced when Bangladesh was not. It started its journey in 1946 at Lahirimohonpur, Pabna (Presently Sirajgonj). It was established to send milk products to Calcutta market.

After Partition, a private company named Eastern Milk Products Limited purchased this dairy company in 1952 from the original owner. In 1965 the first milk producer's co-operative union was formed as named Eastern Milk Producers Co-operative Union Limited (BMPCUL). After that dairy plants were run by Eastern Milk Producers Co-operative Union Limited (BMPCUL).

In 1973 Bangladesh Government has taken it under their supervision. The name of the organization was changed when Bangladesh Government became the owner of the company. In 1977 a brand name of the company was fixed as Milk-vita.

Bangladesh Milk Producers Co-operative Union Limited (EMPCUL) established different plants in Baghabarighat (Bogra), Tekerhat (Madaripur) Mirpur-7 (Dhaka).

Earlier Bangladesh Milk Producers Co-operative Union Limited (EMPCUL) has started its journey to supply raw milk countrywide. Then it started to supply different dairy products.

The Head Office of this organization name "Dugdha Bhaban" is at Dhaka. At present it is one of the top ranked dairy industry in Bangladesh based on quality.

2.2 Objective of the Company

Bangladesh Government started Bangladesh Milk Producers Co-operative Union Limited (EMPCUL) earlier to drive away the poverty among rural people. Other objectives are given below-

- To promote production and improve nutrition & Quality
- To ensure customers satisfaction
- To increase purchasing power
- To Increase popularity
- To create new employment opportunity
- To keep business morality
- To develop local farmers condition

- To ensure adulteration free final product
- To increase quantity and quality products for consumers

2.3 Products:

- Pasteurized milk
- Chocolate milk
- Butter
- Gee
- Laban
- Sweet Yoghurt
- Sour Yoghurt
- Rosh-malai
- Chocolate Ice-cream
- Vanilla Cup Ice-cream
- Power milk

CHAPTER-THREE

DESIGN OF THE STUDY

3.1 Study Area

Study area is divided into 2 areas. Such as:

1. Laboratory
2. Production

3.2 Laboratory

A laboratory is essential for quality check of different ingredients and final products. It also ensure safety of consumers. It also works for development of any products. Different types of operational test occurred in the laboratory, some of them given below as example-

- Platform test/Alcohol test
- CLR test
- Fat test
- Organoleptic test

3.2 Production

Production area is that where fresh raw ingredients (milk) are processed for further processing. Production area also divided into different groups, such as-

- Mixing area
- Processing area
- Packaging area
- Storage area

Different Production plant is used for different types of products production. But sometimes same plant can be used for many products.

CHAPTER-FOUR

PROCESSING SECTION

Composition of milk:

- Water-87.3%
- Total solid-12.7%
- Fat-3.7%
- SNF-9%
- Lactose-4.5%
- Mineral-0.7%
- Protein-3.8%
- Casein-3.3%
- Albumin & Gluten-0.5%

4.1 Pasteurized milk

Procedure:

1. Raw milk is collected from farm and from co-operative union office
2. Collected raw milk is passed through platform test and others adulteration test.
3. Then passed milk is chilled in a storage vat at 4°C
4. Storage milk is recombined with skim milk or full cream milk for maintaining fat percentage (3.5%) according to BSTI standard.
5. If raw milk have higher fat percentage then skim milk is added to make balance
6. If raw milk have less fat percentage then full cream milk is added to make balance
7. Then these recombined milk is pasteurized milk is pasteurized at 80 to 85°C for 15 seconds.



4.1 Figure: Milk Pasteurizer

8. Pasteurized milk is homogenized by milk homogenizer.



4:2 Figure: Milk Homogenizer

9. Then cooling them at 4°C

10. Then Cooled milk is stored in stored in storage vat (4 vat)

11. Then cooled milk is taken in the packaging machine.



4:3 Figure: Milk Packing machine

12. In the packaging area milk is packaged in different amount such as 250ml, 500ml, 1liter etc.



4:4 Figure: Packaged Milk

13. If found any fault in pasteurized packaged milk then it is taken away from packaging area and follow the procedure again
14. Well packaged pasteurized milk is stored in the freezing room at 0 to 4°C.

4.2 Chocolate Milk:

Chocolate milk is another dairy product made by milk-vita. It is popular in Bangladesh especially in among the children.

Ingredients/Recipe: (For 400kg)

- 1.SMP-12kg
- 2.FCMP-30kg
- 3.Sugar-33kg
- 4.Stabilizer-0.60kg
- 5.Cocoa powder-2.80kg
- 6.Color-0.032kg
- 7.Water-321.568kg

Procedure:

1. At first some hot water (approximately 60°C) is added into the blending vat. Then full cream milk power (FCMP), skim milk power, (SMP), Sugar, Stabilizer and finally remaining water are added. The mixing operation is blended at 80°C in the mixing vat so that the warm mix which dissolve them.
2. Then the mixture is pasteurized by a continuous heating process. The liquid mixture is heated in a vat to at 81°C for 15 seconds and subsequently cooled by the chilled water which helps to destroy pathogenic bacteria present in the mixture.
3. Then homogenize the mixers.
4. Then chocolate milk are packaged by foil paper packaging
5. Then they are stored in the storage room at 4°C temperature
6. Then they distribute in the market to serve the consumers.

Health Benefits of Chocolate Milk:

- Speeds-up Recovery
- Strengthens Bones
- Boosts Immunity
- Regulates Blood Pressure
- Improves Digestion.

4.3 Ice-cream:

Ingredients/Recipe: (For 100kg)

1. Sugar-16%
2. Butter-8%
3. Stabilizer-0.5%
4. FCMP-13.5%
5. Flavor-0.21%
6. SMP-1.1%
7. Water-All the rest

Procedure:

1. At first some hot water (approximately 60°C) is added into the blending vat. Then full cream milk powder (FCMP), skim milk powder, (SMP), Sugar, Stabilizer and finally remaining water are added. The mixing operation is blended at 80°C in the mixing vat so that the warm mix which dissolve them.
2. Then the mixture is pasteurized by a continuous heating process. The liquid mixture is heated in a vat to at 81°C for 15 seconds and subsequently cooled by the chilled water which helps to destroy pathogenic bacteria present in the mixture.
3. Homogenization helps largely to the smoothness of Ice-Cream which gives fine dispersion of butterfat globules in the mixture. The function of homogenizer is to break downs the fat globules.
4. After the homogenization the mix is cooled down to 4°C. This is known as aging. The mix held in vat from 3 to 24 hours at a temperature of 5°C.
5. Then fill them in the Ice-Cream container.
6. Then freezing them in at freezing temperature.
7. Then Ice-Cream are kept at hardening room for 1 hour at -20°C where semi-solid become solid Ice-Cream.
8. After hardening Ice-Cream are kept in the storage room where temperature maintained -4°C to -20°C.
9. Then they are ready for marketing.



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4:5 Figure: Ice Cream

Health Benefits of Ice Cream:

- ✓ Source of Vitamins
- ✓ Provides Energy
- ✓ Source of Minerals
- ✓ Stimulates the Brain

4.4 Sweet Yoghurt & Sour Yoghurt

4.4.1 Sweet Yoghurt Manufacturing Process

Sweet Yoghurt:

Sweet yoghurt is a popular dairy product. It is popular in both young and children. Particularly in all aged people. Sweet yoghurt is another product made by Milk-vita.

Ingredients/Recipe:

1. Milk
2. Sugar
3. Culture

Procedure:

1. First, milk is taken in a cleaned vessels
2. Then boil them at boiling temperature until 40% reduced by weight, Milk-vita wants to assist good product to people so they do this.
3. Then add 15% sugar in the milk.
4. Then heat the mixer
5. Remove from the heat and cooled until 40°C
6. Then added starter culture in the mixer
7. Then preserve it 6 hours to make curd
8. Then keep them at 4°C temperature
9. Then they are ready for packaging
10. Then marketing them for sell.

Benefits of using Sweet Yoghurt:

1. Good for digestion
2. Easy to eat
3. Not much expensive

4.2 Sour Yoghurt manufacturing process**Sour Yoghurt:**

Milk-vita produce sour yoghurt. It is popular for using it in cooking specially in roast-making.

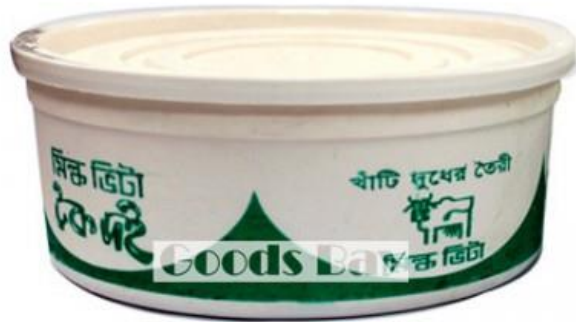
Ingredients/Recipe:

1. Whole milk
2. Skim milk
3. Culture

Procedure:

1. 1st whole milk are taken in a cleaned vessels
2. Then add skim milk into it
3. Then boil them at boiling temperature
4. Then cool as soon as possible to 40°C to 45°C
5. Added starter culture in it
6. Then wait for 4 hours to coagulate the mixer
7. Then packaged in plastic box

8. Then they kept them in the refrigeration
9. Then they are marketing for selling.



4:6 Figure: Sour Yoghurt

Benefits of using sour Yoghurt:

1. Good for increase taste of food
2. Helpful for flavor
3. Economical benefits

4.5 LABAN (A Yoghurt Drink)

It is a dairy product which is also known as yoghurt drink. It found all over the world but specially in South-Asian country. Milk-vita provide 80% yoghurt in their laban.

Ingredients:

1. Yoghurt
2. Salt
3. Stabilizer
4. Sugar

Procedure:

1. For making Laban at first yoghurt is poured into the mixer machine
2. Then salt and sugar are added into the yoghurt
3. Then stabilizer is used in the mixer

4. After adding the stabilizer in the mixer operator started the mixer machine and mixed it properly for an hour with heat
5. Well mixed mixer is ready to pour as Laban into the packaging bottle or jar
6. Poured bottles are sealed and labeled them nicely
7. After Labelling bottles are stored in the freezing room for 24 hours
8. After bottles are taken outside and make them dry
9. Finally wrapping them in a cartoon or box
10. Then stored them in the storage room

Benefits of Laban:

1. It is good for digestion
2. It increase palatability

4.6 Rash-malai:

It is one of the sweet dairy products made by Milk-vita. It is also a popular sweet desserts in South-Asian country.

Ingredients/Recipe:

1. Curd
2. Flour
3. Baking power
4. Green cardamom
5. Syrup



4:7 Figure: Rash malai

Procedure:

1. 1st some baking powder and curd without water are mixed together to make dough
2. Some flour are used in the dough to make easier handle and make good shapes of sweet
3. Then small sweet balls are kept in the syrup for few hours
4. Then syrup are separated from sweet balls
5. In the mean time milk are heated until they become half by volume
6. Then hot milk are added into the sweet balls
7. Some green cardamom are used for flavor
8. Then they kept for being cool
9. Then cool rash-malai are packed in 1kg box container
10. After packaging they kept in the storage room

CHAPTER-FIVE

Quality Control Section

5.1 Quality control check of raw milk such as:

- Platform test/Alcohol test
- CLR test
- Fat test
- Soda test
- Salt test
- Sugar test

5.2 Quality control check of final products:

- Peroxide test of pasteurized milk
- Microbial test &
- Sensory evaluation check

5.3 C.I.P:

Full meaning of C.I.P is Cleaning-in-Place. CIP is use to ensure safety and to avoid contamination. Use caustic soda as a chemical for ensure C.I.P

Procedure:

1. 1st cold water is used to wash the pipe/vat/tanker
2. Then use hot water to wash the pipe/vat/tanker
3. Then use sodium Hydroxide (caustic soda) 0.5 to 2% / Volume of water to wash again
4. Then use hot water to clean the sodium hydroxide
5. Finally takes last water as a sample to ensure C.I.P
6. Use Phenolphthalein indicator with the water if no color change found that means C.I.P has been done perfectly
7. Then again have to follow the C.I.P procedur

Purposes of C.I.P

1. To ensure safety
2. To avoid contamination
3. To maintain the reputation

Use:

1. Use for transport tanker

2. Use for storage vat & pipes
3. Use for transport tanker

5.4 Platform test:

Platform test is also known as alcohol test. 68% ethanol is used for this test. This test is done for find out milk acidity. Normally it done by the ratio of 1:1 but in Milk-vita it done by the ratio of 2:1, ethanol: sample (milk).

Apparatus & equipment:

1. Test tube
2. Pipette
3. Ethanol
4. Sample (Milk)

Procedure:

1. 1st 2ml 68% ethanol is taken into a test tube by a pipette
2. Then 1ml milk is added into the test tube
3. Shake the sample for while
4. If milk coagulate and stable with the test tube's body then alcohol positive, so this milk is not perfect for further process as pasteurized milk
5. If milk not coagulate then alcohol negative and this milk this good for further process
6. Remember that have to be careful about the use of apparatus

5.5 Fat test:

Fat test is another quality control test parameters of milk. It also important for pricing the milk. Because Milk-vita fixed price of milk by fat percentage. Different animal have different fat percentage in their milk.

Apparatus & equipment:

1. Butyrometer, Nockstop & pin
2. Sulfuric acid
3. Amyl alcohol
4. Centrifuge machine
5. Sample (Milk)
6. Centrifuge machine.

Procedure:

1. 1st 10ml sulfuric acid are taken into butyrometer
2. Then 10.47ml milk is added into it
3. Then 1ml amly-alcohol also added into the mixer
4. Some water has been added to adjust the mixer
5. Thennock-stop and pin is used to lock the butyrometer
6. Then shake the mixer for some times
7. Then put the butyrometer in the centrifuge for 5 minutes with 110RPM at 60°C
8. Then measure the fat percentage by open eyes
9. Normally 3.5 is expected but it can be 3.2 to 4.2
10. Need to be careful in time of using centrifuge machine

Purposes of Fat test:

1. To know the fat percentage
2. To extract extra fat from milk
3. Extracted extra fat can be useful for making other dairy products
4. To minimize cost
5. To know how much skim milk should use
6. To fixed the price of milk

5.6 CLR test:

CLR is the short form of Corrected Lactometer Reading. It also known as specific gravity test or density test. In this test lactometer and temperature reading is important. If temperature found below 20°C then for per 1°C, 0.2 will be deducted from lactometer reading. Similarly temperature found greater than 20°C then for per 1°C, 0.2 will be added with lactometer reading. This test is used to know the density of milk. Normal specific gravity of milk is 1.026 to 1.028.

Apparatus & Equipment:

1. Sample (Milk)
2. Lactometer with thermometer
3. Lactometer jar

Procedure:

1. Clean the lactometer and jar finely
2. Then put the lactometer into the jar

3. Then put the milk into the jar
4. To adjust temperature flow the water on the jar
5. Then measure the lactometer reading and temperature
6. Then calculate the CLR

5.7 Peroxidase test:

This test is conducted to verify the effectiveness of pasteurization of milk. It is another quality control parameters of pasteurized milk

Apparatus & Equipment:

1. Test tubes
2. Pipette
3. NaOH
4. H₂O₂
5. Paraphenylenediamine

Procedure:

1. Take 5ml milk in a test tube
2. Add 1 drop Sodium Hydroxide and shake it
3. Add 1 drop Hydrogen Peroxide and shake it
4. Add 2 drops paraphenylenediamine and shake the mixer for a few seconds
5. Wait 30 seconds
6. If any color change seen in the mixer then peroxidase positive that means pasteurization done properly

Purposes of this test:

1. To check the pasteurization is done properly or not
2. To check the quality of pasteurized milk

5.8 Soda test:

It is one type of adulteration test.

Apparatus & Equipment:

1. Test tube
2. 100% Ethanol
3. Rosalic acid
4. Sample milk

Procedure:

1. Take 2ml 100% alcohol in a test tube
2. Add 2ml milk in it
3. Add 2ml rosolic acid
4. If pink color seen then soda positive
5. If orange color seen soda negative

5.9 Salt test:

It is another adulteration test. People add salt to increase SNF of milk

Apparatus & Equipment:

1. Test tube
2. Silver Nitrate (AgNO_3)
3. K_2CrO_4
4. Sample milk

Procedure:

1. Take 5ml Silver Nitrate in a test tube
2. Add 4 to 5 drops K_2CrO_4 in it
3. Then Finally take 1ml milk
4. If brown color seen in the mixer it means salt negative
5. If color turns into slightly yellowish color that means salt positive

5.10 Sugar test:

Sugar test is one kind of adulteration test. Because some bad peoples are intentionally add some sugar in milk. So to find out this official do this test.

Apparatus & Equipment:

1. Test tube
2. Test tube holder
3. Bunsen burner
4. Resorcinol solution
5. Sample milk

Procedure:

1. 1st 5ml resorcinol solution are taken into a test tube
2. Then add 1ml milk into the test tube
3. After added milk it become coagulate
4. Then use holder to hold the test tube to put it into the Bunsen burner's flame
5. Keep it until boiling
6. Then take away from flame and gives time to cool the mixer
7. Then within few minutes if mixer turns brick red color which means sugar test positive
8. If mixer shows slightly red color then it is sugar test negative
9. Sugar test positive milk are not acceptable

Purposes of sugar test:

1. To check adulteration
2. To ensure there is no added sugar in milk
3. To ensure safety

5.11 Microbiological/Bacteriological test:

Bacteriological test is important to know the bacterial count in milk and milk products.

Because bacteria such as E. coli can cause contamination in milk. And E. coli can cause many problems in consumers if their number is high in the milk. Normally total count of bacteria range is 30 to 35 thousand. E. coli cause dysentery. More than this is not acceptable. Also Coliform bacteria are concern to count. If found more coliform then have to do C.I.P again in production channels.

Characteristic of Coliform:

1. Gram negative bacteria
2. Group of bacteria
3. Rod Shape
4. Gas producer (CO₂)
5. Their production mainly occurs in soil
6. 10/ml

Apparatus:

1. Bunsen burner
2. Pipettes
3. Dilution tubes

4. Petri dishes
5. Incubator
6. Autoclave
7. Refrigerator
8. Spirit lamp

Procedure:

1. 1st make a ringer solution by water and salt (Such as sodium chloride, potassium chloride, calcium chloride etc.)
2. Then pour them in the dilution tube
3. Then heat them until boil and remove from heat & let them cool
4. Spirit lamp is used to sterilize the pipette every-time before when use taken sample into the petri dish
5. For coliform take 0.5ml and for total count take 1ml milk into the ringer solution and shake it to dilution the solution
6. Then take 1ml from the dilution solution into another ringer solution and dilute them
7. Then take 1ml from it and transfer it into petri dish
8. Then transfer red agar into the sample containing petri dish for coliform but transfer white agar into the sample containing petri dish for total count
9. Adding red agar 2 times is good for growth of bacteria
10. Then keep them in the incubator at 40°C to 42°C for 18 hours
11. After 18 hours count the bacteria by open eyes
12. For total count calculate the bacteria by divided the petri dish into 4 parts and count 1 parts bacteria and multiply with 4 and multiply the digit by 100
13. But for coliform count the colony and write them in the note
14. If any unexpected result found then warn the operators to make sure proper C.I.P next time

Purposes of microbiological test:

1. To ensure proper C.I.P
2. To ensure there is no contamination
3. To ensure safety of consumers health

CHAPTER-SIX

Result & Discussion

6.1 Alcohol test:

Alcohol Positive (+) = Coagulation of milk

Alcohol Negative (-) = No Coagulation of milk

In Milk-vita we mostly found alcohol negative. Alcohol Positive milk must be rejected for further process.

6.2 Fat Test:

From the butyrometer reading fat percentage was calculated as 3.4

Normally 3.5 is expected as standard but 3.2 to 4.2 also found in some animal's milk. But less than 2% fat containing milk must be rejected.

6.3 CLR Test:

Milk-vita Tested milk's specific gravity was 1.0286 which means no water was added in it. Specific gravity of milk vary from animal to animal. Normal gravity of Cow milk range is between 1.028 – 1.030 and for buffalo milk 1.030 to 1.032. Sugar and flour is added to rise the density of milk by lying people.

6.4 Peroxidase Test:

Peroxidase Positive (+) = Blue color

Peroxidase Negative (-) = White Color

In Milk-vita we found peroxidase positive regularly. Peroxidase Positive milk must be rejected for further process.

6.5 Soda Test:

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

Soda Negative (-) = Orange color

In Milk-vita soda test was negative. To increase the foaming of milk soda is intentionally added by dishonest people. Soda Positive milk must be rejected.

6.6 Salt Test:

Salt Positive (+) = Yellow color

Salt Negative (-) = Brown color

Salt test was negative in Milk-vita. Salt test positive milk is known as adulterated milk. So salt test positive milk must be rejected. Salt is added to milk to increase the SNF content of milk.

6.7 Sugar Test:

Sugar Positive (+) = Brick red color

Sugar Negative (-) = Slightly red color

Milk-vita Sugar test was negative all the time. Sugar positive milk is adulterated milk. Sugar is added intentionally by dishonest people to increase the carbohydrate content of milk. It also added to increase the density of milk.

6.8 Clot-On-Boiling Test:

Generally above 0.22% of lactic acid in milk gives test positive. Such milk can't stand for heat treatment. So this kind of milk is not acceptable for processing or further heat treatment.

6.9 Microbiological Test:

Total bacterial count was 18 thousand/ml. 30 to 35 thousand total bacterial count is acceptable. Coliform count was 8/ml. According to standard coliform count rang should be less than 10/ml is acceptable. Proper pasteurization is necessary to kill these micro-organisms. It is essential to kill them because they are harmful for consumption. They can cause many Disease in human.

6.10 C.I.P :

Positive (+) = Pink color

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

In milk vita C.I.P found negative regularly except 1 time.

Conclusion:

This internship program helped to learn lots of things about dairy products. It has covered both production and quality control site. It was a great Opportunity to know about Milk-vita and its regular works. Further, it enriched the knowledge about processing of some dairy products such as pasteurized milk, chocolate milk, ice-cream, Laban, Yoghurt etc. It will be supportive in future to conduct adulteration test of dairy products. Adulteration test of milk such as soda test, salt test, sugar test *etc* have been learned there. Hopefully during this internship the knowledge gathered about doing products specially the information about BSTI standards of different doing products would be helpful in future life.