



A landmark to create the Future

Internship Report

On

**“Quality Control Assurance & Production of Dairy Products
At Dhaka Dairy Plant (Milk-vita)”**

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Date of Submission: 18th December, 2019

CERTIFICATION OF APPROVAL

I am pleased to certify that the “internship report” conducted by Md. Atiqur Rahman ID: 152-34-402 bearing of the Department of Nutrition and Food Engineering has been approved for presentation and defense/ viva-voce. I am pleased to hereby certify that the data and findings presented in the report are the authentic work I strongly recommended the report presented by Md. Atiqur Rahman for further academic recommendations and defense/viva-voce. Md. Atiqur Rahman bears a strong moral character and a very pleasant personality. I was pleased to supervise him. I wish him all success in life.



Electronic sign

Dr. Sheikh Mahatabuddin

Associate Professor

Department of Nutrition and Food Engineering

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LETTER OF THE TRANSMITTAL

Date: 18th December, 2019

Professor Dr. Md. Bellal Hossain
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject: Submission of the internship report on Quality Control Assurance & Production of Dairy Products at Dhaka Dairy Plant (Milk-vita)”

Dear Sir,

With respect, I would like to thank you for give this opportunity to submit the internship report on “quality control assurance & production of dairy products at Dhaka dairy plant (Milk-vita) as a part of the Nutrition and Food Engineering (NFE) program curriculum for the requirement of undergraduate degree. I have given my best to make this report.

To prepare the report I collected what I feel to be most relevant information with specific and coherent as possible. It is great achievement to work and without your help it is incomplete. And thanks to give an opportunity to work in NFE lab.

All the instructions I followed by Dr. Mahtabuddn sir given to me what need in well prepare report and I will be grateful if u accept my project report.

Finally, thank you again for your support and considering.

Yours sincerely

.....
Md. Atiqur Rahman
ID: 152-34-402
Department of Nutrition and Food Engineering
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LETTER OF AUTHORIZATION

Date: 18th December, 2019

Professor Dr. Md. Bellal Hossain
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject Letter of authorization of the internship report on Quality Control Assurance & Production of Dairy Products at Dhaka Dairy Plant (Milk-vita)”

Dear Sir,

This is my truthful declaration that the “Internship Report”. I have prepared is not a copy of any

Thesis report previously made any other students.

I also express my honestly confirmation in support to the fact that the said thesis report has Neither been used before to fulfill my other course related not it will be submitted to any other

Person an authority in future.

Yours sincerely

.....
Md. Atiqur Rahman
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Chapter 01





Introduction

Milk is a perfect nourishment for a wide range of well evolved creatures. Milk originates from mammary organs of warm blooded creatures. [1] Normally crude milk of dairy animals and goat in neighborhood advertise, however prepared milk are found in showcase as bundled milk. These days various milk maker organizations are accessible in Bangladesh. Bangladesh Milk Producers Co-employable Union Limited (BMPCUL) or Milk-vita is one of them. Their motivation is to serve great items to clients. [2]

Milk-vita gather milk from neighborhood town or market by co-employable association. Prior to gathering, they test the nature of milk by their specialists. At that point they transport gathered milk to their everything milk prepared plant [3] however before sending them, they cooled their gathered milk for guaranteeing nature of milk.

Bangladesh Milk Producers Co-employable Union Limited (BMPCUL) or milk vita serve unadulterated items. Their motivation is to buyer fulfillment.

Definition of Milk:

Milk is a translucent white fluid substance. Which is created by mammary organs of warm blooded animals. It is the essential wellspring of sustenance for youthful vertebrates before they can process different nourishments. [4]

Milk is additionally characterized as lacteal discharge free from colostrum. Milk is acquired from solid cows 5 days after and 15 days before parturition.[5] which substance at least 3.50% of milk fat. Also, at the very least 8.50% milk solids of fat.



Figure 1: Milk

<https://www.thoughtco.com/what-is-the-ph-of-milk-603652>





Origin of the study

Proposition or task report incompletely satisfy prerequisite of the essential credits and trainings for an ungraduated understudies. In that review, Department of Nutrition and Food Engineering of Daffodil International University gives proposal chance to understudy who going to finish their multiyear Bachelor courses in their college research facility.

Reason for this investigation about prepared to drink tamarind leaves powder as following:

- To discover all data about tamarind leaves
- To know the amount it advantageous for human wellbeing
- To find out about technique and device identified with this task
- To figure out how to built up our proficiencies.
- To become self-subordinate
- To learn scholastic composition and procedures to run free extend.

Goal of the investigation

We have two sorts of goals for this examination:

- i. General targets
- ii. Specific targets





Specific Objective:

Specific contains:

- To center around the sterile generation and quality control of Dhaka Dairy Plant (Milk-vita)
- To have a thought of exercises Bangladesh Milk Producers Co-usable Union Limited (BMPCUL)
- To know various exercises of this association
- To give a diagram of Bangladesh Milk Producers Co-employable Union Limited (BMPCUL)

Determination of the point:

The determination of the point for any examination is significant. It relies upon picked up information and on-pragmatic experience from the allotted association.

Wellspring of information:

Basic information can be gathered from both essential and optional source.[6]

Essential Source of information:

- Primary information gathered from the handy work
- Data gathered from representative





Optional Source of information:

- From authority and officials of the association
- From paper, diary, articles and so on.
- Different sites identified with dairy science
- From manuals and documents of the association

Instruments Used:

Some number-crunching, graphical apparatuses are utilized in this report for examining the information and to arrange various kinds of information.

1.6 Limitations of the report:

Each report have some restriction so my report have likewise some confinement. These are given beneath:

- Due to some restriction some data, particularly from extreme workers couldn't be gathered
- Due to certain principles and guideline they didn't give me some data since that is against their arrangement
- All of them was not topped off the criticism appropriately which cause lacking of information

Because of lacking time they was not able give me numerous data.





The examination and entry level position program has the accompanying purposes:

1. To Find my Future Employer, and think what work favor for me.
2. To turn out from course readings and find out about this present reality.
3. To assistance understudies to express reliability, activity, and demonstrable skill and errands they are doled out
4. To satisfy the necessity of NFE Program
5. To contrast the genuine situation and the exercises learned in DIU
6. To think about Milk-vita how to they work.
7. To find out about creation and quality control of dairy items in milk vita
8. To learn Different kinds of dairy items.
9. To Find my good examples
10. To Test-Drive my insight and aptitudes.
11. To Strengthen my CV
12. To make a system.
13. To the Experience of my lifetime.

This report is the consequence of one month's long temporary position program coordinated in Bangladesh Milk Producers Co-employable Union Limited (BMPCUL) is





set up as a prerequisite for the fulfillment of the NFE program of Daffodil International University. Accordingly, I have to present this report dependent on the "Quality control Assurance and Production of Dairy Products at BMPCUL.





Chapter 02

Overview of the organization





Historical background of the company:

Bangladesh Milk Producers Co-usable Union Limited (BMPCUL) known by its image name Milk-vita. Late M. Mukhlesur Rahman Pioneer of Dairying in Bangladesh a Dairy Plant was set up at Lahirimohanpur, Pabna (by and by Sirajgong) it begins its adventure in 1946. This time milk item simple to send Kolkata advertise for the railroad framework. In 1952 after partitioned, the first proprietor of Eastern Milk Products Limited a privately owned business purchasing this dairy company.[7] The primary milk makers' at Lahirimohanpur Government patronization over the plant.

Co-usable was shaped in 1965, under the name Eastern Milk Producers' Co-usable Union Limited (EMPCUL). In 1973 under their watch, Bangladesh government has taken it. At the point when Bangladesh government proprietor of the organization the difference in the organization named. In 1977 a brand name of the organization was fixed as Milk-vita.[8] The destitution mitigation The Father of country Bangobandhu Sheik Mujibur Rahman to improve the milk creation for this nation. Bangladesh Milk Producers Co-usable Union Limited (EMPCUL) set up various plants in Baghabarighat (Bogra), Tekerhat (Madaripur) Mirpur-7 (Dhaka). [9]

Prior Bangladesh Milk Producers Co-employable Union Limited (EMPCUL) has begun its voyage to supply crude milk countrywide. At that point it began to supply distinctive dairy items.

The Head office of this association named "Dugdha Bhaban" is at Dhaka. At present, it is one of the top-positioned dairy industry in Bangladesh dependent on quality.

Objective of the Company

Bangladesh Government began Bangladesh Milk Producers Co-employable Union Limited (EMPCUL) prior to drive away the neediness among rustic individuals. Different targets are given underneath

- To promote production and improve nutrition & quality.
- To ensure customers satisfaction.
- To develop local farmers condition
- To ensure adulteration free final product.



- To increase quantity and quality products for consumers.
- To increase purchasing power
- To increase popularity
- To create a new employment opportunity.

Products and Services:

- Pasteurized milk
- Chocolate milk
- Powder milk
- Gee
- Butter
- Laban
- Sweet Yoghurt
- Sour Yoghurt
- Chocolate Ice-cream
- Vanilla Cup Ice-cream



Figure 2: Products of Milk Vita

<http://milkvitabd.blogspot.com/2017/01/history-of-milk-vita.html>



Chapter 03

DESIGN OF THE STUDY





Study Area

Study area divided into 2 areas. Such as

1. Laboratory
2. Production

Laboratory

A research center as we probably am aware basic for quality check of various fixings and last items .guarantee nature of the item. It likewise guarantees the security of purchasers. It likewise works for the advancement of any items .quality test, defilement test. Various kinds of operational test happened in the research center, some of them given below an example-

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

Production

The 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

The different Production plant is used for different types of products produced. But sometimes the same plant can be used for many products.





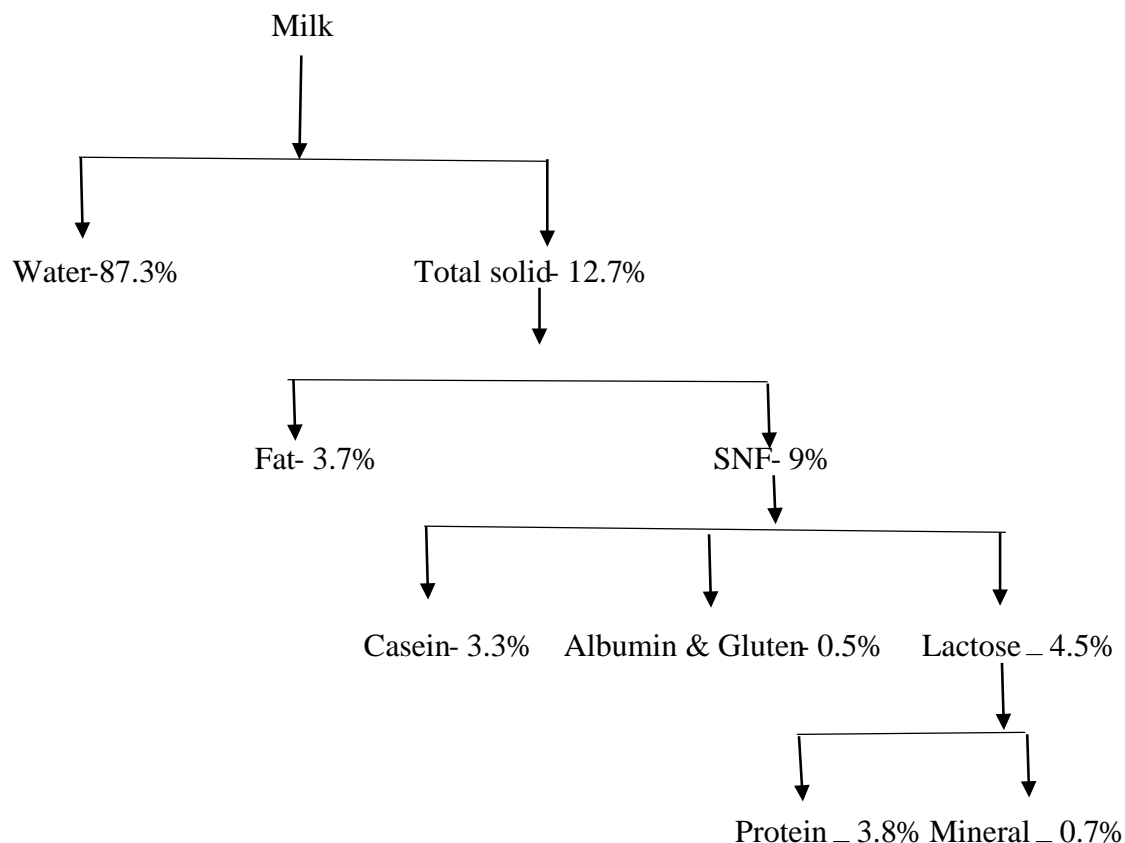
Chapter 04

Processing of section





Composition of milk:



PASTEURIZED MILK

Procedure:

1. At first Collected raw milk from a farm and it's from co-operative union office.
2. After collected raw milk it's passed through platform test and other adulteration tests.
3. After that milk chilled, then passed milk is chilled in a storage vat at 40°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 has less fat percentage then full cream milk is added to make balance.



Figure 3: Milk Pasteurizer

<https://www.technomond.com/product/milk-pasteurizer-machine/>

7. Then these recombined milk is pasteurized, it's pasteurized by at 80 to 85°C for 15 seconds.



Figure 4: Milk Homogenizer

<http://homogenizermachine.quality.chinacsw.com/>





8. Pasteurized milk is homogenized by milk homogenizer.

9. Then cooling them at 40°C .cooled milk is put away tank (4 tank) 10. At that point cooled milk is taken in the bundling machine.



Figure 5: Milk Packaging Machine

<https://www.indiamart.com/proddetail/double-head-milk-packaging-machine-13310718730.html>

10. In the packaging area, milk is packaged in a different amount such as 250ml, 500ml, and 1Litre Etc.





Figure 6: Packaged Milk (1Litre Packet)

<https://www.bdgift.com/products/2060-17-milk-vita-liquid-milk/>

11. Be carefully if found any fault in pasteurized packaged milk then it is taken away from the packaging area and follow the procedure again.
12. Well packaged pasteurized milk is stored in the freezing room at 0 to 40°C.

Chocolate Milk:

Chocolate milk is milk with mix Cocoa powder and it's another dairy product made by milk-vita. It is popular in Bangladesh especially in among the children.

Ingredients/Recipe: (For 400kg)

- SMP- 12kg
- FCMP-30kg
- Sugar- 33kg
- Stabilizer- 0.60kg
- Cocoa powder- 2.80kg
- Color- 0.032kg
- Water- 321.568kg





Procedure:

1. At first, take some high temp water (roughly 60°C) is included into the mixing tank. At that point full cream milk powder (FCMP), skim milk powder, (SMP), sugar, stabilizer lastly remaining water are included. At that point blending all fixing, the blending activity is mixed at 80°C in the blending tank with the goal that the warm blend which breaks down them.
2. Then the blend is sanitized by a nonstop warming procedure. The fluid blend is warmed in a tank to at 81°C for 15 seconds and thusly cooled by the chilled water which crushes pathogenic microorganisms present in the blend.
3. Then homogenization the blenders.
4. Then chocolate milk is bundled by foil paper bundling.
5. Then they are put away in the extra space at 40°C temperature.
6. Then they disseminate in the market to serve the shoppers.,



Figure 7: Chocolate milk

http://www.goodsbaybd.com/index.php?route=product/product&product_id=246





Health Benefits of Chocolate Milk:

- Protein source for muscle repair
- Speeds-up Recovery
- Boost energy
- Strengthens Bones
- Boosts Immunity
- replenish calcium levels
- Regulates Blood Pressure
- Improves Digestion

Ice-cream:

Ingredients/Recipe: (For 100kg)

- Sugar-16%
- Butter-8%
- Stabilizer-0.5%
- FCMP- 13.5%
- Flavor- 0.21%
- SMP- 1.1%
- Water- All the rest





Procedure:

1. At first, taken some high temp water (roughly 60°C) is included into the mixing tank. At that point full cream milk powder (FCMP), skim milk powder,(SMP), sugar, stabilizer lastly remaining water is included. At that point all fixing blending, the blending activity is mixed at 80°C in the blending tank with the goal that the warm blend which breaks up them.
2. Then the blend is sanitized by a consistent warming procedure. At that point 81°C for 15 seconds the fluid blend is warmed in a tank and in this manner cooled by the chilled water which wrecks pathogenic microscopic organisms present in the blend.
3. Then going to Homogenizer the Homogenization encourages generally to the smoothness of IceCream which gives fine scattering of butterfat globules in the blend. The capacity of the homogenizer is to breakdowns the fat globules.
4. Then Aging, after the homogenization the blend is chilled off to 40°C.The blend held in tank from 3 to 24 hours at a temperature of 50°C.
5. Then fill them in the frozen yogurt holder.
6. Then solidifying them in at frosty temperature.
7. Then frozen yogurt are kept at solidifying space for 1 hour at - 200°C where semi-strong become strong dessert.
8. After solidifying frozen yogurt are kept in the extra space where temperature kept up - 4to - 20°C.
9. Then they are prepared to sell.

Health Benefits of Ice Cream:

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





Sweet Yoghurt & Sour Yoghurt

Sweet Yoghurt Manufacturing Process Sweet yogurt:

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

Ingredients/Recipe:

1. Milk
2. Sugar
3. Culture



Figure 8: Sweet Yoghurt

http://www.goodsbaybd.com/index.php?route=product/product&product_id=262





Procedure:

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

Benefits of using Sweet Yogurt:

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

Sour Yogurt manufacturing process Sour Yogurt:

Milk-vita produces sour yogurt. It is popular for using it in cooking specially in a roast-making.

Ingredients/Recipe:

1. Whole milk
2. Skim milk
3. Culture





Procedure:

1. 1st whole milk is taken in a cleaned vessel then add skim milk into it
2. Then boil them at boiling temperature then cool as soon as possible to 40 to 45°C



Figure 9: Sour Yogurt

http://www.goodsbaybd.com/index.php?route=product/product&product_id=262

3. Added starter culture in it
4. Then wait for 4 hours to coagulate the mixer
5. Then packaged in a plastic box
6. Then they kept them in the refrigeration
8. Then they are marketing for sale.





Benefits of using sour yogurt:

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

LABAN (A Yogurt Drink)

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

Ingredients:

- Yogurt
- Salt
- Stabilizer
- Sugar
- water

Procedure:

1. For making Laban at first yogurt is poured into the mixer machine then salt and sugar are added to the yogurt
2. The stabilizer is used in the mixer after adding the stabilizer in the mixer operator started the mixer machine and mixed it properly for an hour with heat.
3. Well mixed mixer is ready to pour as Laban into the packaging bottle or jar.
4. Poured bottles are sealed and labeled them nicely
5. After Labelling, bottles are stored in the freezing room for 24hours
6. Then bottles are taken outside and make them dry





7. Finally wrapping them in a cartoon or box
8. Then stored them in the storage room.

Benefits of Laban:

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

Matha (A Yogurt Drink)

It is a dairy product which is also known as yogurt drink. It found all over the world but specially in South-Asian country. Milk-vita provides 80% yogurt in there Matha.

Ingredients:

- Yogurt
- Sour curd
- Salt
- Bit salt
- Stabilizer
- Sugar
- water

Procedure:

1. For making matha at first yogurt is poured into the mixer machine then salt, bit salt and sugar are added to the yogurt
2. The stabilizer is used in the mixer after adding the stabilizer in the mixer operator started the mixer machine and mixed it properly for an hour with heat.
3. Well mixed mixer is ready to pour as matha into the packaging bottle or jar.





4. Poured bottles are sealed and labeled them nicely
5. After Labelling, bottles are stored in the freezing room for 24hours
6. Then bottles are taken outside and make them dry
7. Finally wrapping them in a cartoon or box
8. Then stored them in the storage room.

Benefits of Matha:

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

Rosh-malai:

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

Ingredients/Recipe:

- Curd
- Flour
- Baking powder
- Green Cardamom
- Syrup





Figure 10: Rash-malai

http://www.goodsbaybd.com/index.php?route=product/product&product_id=419

Procedure:

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





Chapter 05

Quality Control Section





Quality control check of raw milk such as:

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

Quality control check of final products:

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

C.I.P (Cleaning-in-Place):

The full meaning of C.I.P is Cleaning-in-Place. C.I.P is using to ensure safety and to avoid contamination. Use caustic soda as a chemical to ensure C.I.P

Purpose of C.I.P:

- To avoid contamination
- To ensure safety
- To maintain the reputation

Procedure:

1. At 1st cold water is used to wash the pipe/vat/tanker then use hot water to wash the pipe/vat/tanker
2. Then use Sodium Hydroxide (caustic soda) 0.5 to 2% / Volume of water to wash again





3. Then use hot water to clean the sodium hydroxide
4. Finally takes last water as a sample to ensure C.I.P
5. Use Phenolphthalein indicator with the water if no color change found that means C.I.P has been done perfectly.
6. But if the water turns into pink color with Phenolphthalein indicator that means C.I.P has not been done perfectly
7. Then again have to follow the C.I.P procedure.

Use of C.I.P:

- Use for transport tanker
- Use for storage vat & pipes
- Use for transport tanker

Platform test:

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

This test is done to find out milk acidity.

Apparatus & equipment:

- Sample (Milk)
- Test tube
- Pipette
- Ethanol





Procedure:

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

Fat test:

A fat test is another quality control test of milk. It also important for pricing the milk. Because milk-vita fixed price of milk by fat percentage. A different animal has a different fat percentage in their milk.

Apparatus & equipment:

- Sample (Milk)
- Butyrometer, Nockstop, & pin
- Centrifuge machine
- Sulfuric acid
- Amyl alcohol





Procedure:

1. 10ml sulfuric acid is taken into butyrometer then 10.47ml milk is added into it.
2. Then 1ml amyl-alcohol also added to the mixer some water has been added to adjust the mixer.



Figure 11: Butyrometer

3. Then lock-stop and a pin are used to lock the butyrometer.
4. Then shake the mixer for sometimes then put the butyrometer in the centrifuge machine for 5 minutes with 110RPM at 60°C.
5. Then measure the fat percentage by open eyes.
6. Normally 3.5 is expected but it can be 3.2 to 4.2
7. Need to be careful in time of using centrifuge machine.





Purpose of Fat test:

- To know the fat percentage
- To know how much skim milk should use
- Extracted extra fat can be useful for making other dairy products
- To minimize cost
- To fix the price of milk.
- To extract extra fat from milk

CLR (Corrected Lactometer Reading) test:

Corrected Lactometer Reading is the short form CLR. It also is 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. A normal specific gravity of milk is 1.026 to 1.028.

Apparatus & Equipment:

- Sample (milk)
- Lactometer jar
- Lactometer with thermometer





Figure 12: Corrected Lactometer Reading test

<http://www.agrimoon.com/estimation-of-snf-in-pasteurized-milk-by-specific-gravity-method/>

Procedure:

1. Clean the lactometer and jar finely then put the lactometer into the jar
2. Then put the milk into the jar
3. To adjust temperature flow the water on the jar 4. Then measure the lactometer reading and temperature.
5. Then calculate the CLR.

5.7 Peroxidase test:

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

Apparatus & Equipment:

- Test tubes
- Pipette
- H₂O₂



- Paraphenylenediamine
- NaOH

Purpose of this test:

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

Procedure:

1. Take 5ml milk in a test tube Add 1 drop Sodium Hydroxide and shake it
2. Then add 1 drop Hydrogen Peroxide and shake it
3. Then add 2 drops paraphenylenediamine and shake the mixer for a few seconds
4. Wait 30 seconds
5. If any color change was seen in the mixer then peroxidase positive that means pasteurization has not been done properly
6. If seen no color change then peroxide negative that means pasteurization done properly.

Soda Test:

It is one type of adulteration test.

Apparatus & Equipment:

- Test tube
- Sample milk
- 100% Ethanol
- Rosalic acid



**Procedure:**

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

5.9 Salt test:

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

Apparatus & Equipment:

- Sample milk
- Test tube
- Silver Nitrate (AgNO_3)
- K_2CrO_4

Procedure:

1. At 1st take 5ml Silver Nitrate in a test tube then add 4 to 5 drops K_2CrO_4 in it.
2. Then finally take 1ml milk
3. If brown color is seen in the mixer it means salt negative
4. If color turns into the slightly yellowish color that means salt positive





Sugar Test:

Sugar test is one kind of adulteration test. Some bad people added some sugar in milk to increase the density of milk. So to find out these officials do this test.

Apparatus & Equipment:

- Sample milk
- Test tube holder
- Test tube
- Bunsen burner
- Resorcinol solution

Purpose of sugar test:

- To ensure safety
- To check adulteration
- To ensure there is no added sugar in milk

Procedure:

1. 1st of all 5ml resorcinol solution are taken into a test tube then add 1ml milk into it
2. After that added milk, it becomes coagulate
3. Then use the holder to hold the test tube to put it into the Bunsen burners flam
4. And Keep it until boiling
5. Then take away from flam and gives time to cool the mixer





6. Then within a few minutes if mixer turns brick red color which means sugar test positive
7. If the mixer shows a slightly red color then it is sugar test negative
8. So Sugar test positive milk is not acceptable.

Microbiological /Bacteriological test:

The bacteriological test is essential 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. Generally total count of bacteria range is 30 to 35 thousand. E. coli cause dysentery. More than this is not acceptable. Also, Coliform bacteria are a concern to count. If found more coliform then have to do C.I.P again in production channels.

Characteristic of Coliform:

- 10/ml
- Rod Shape
- Their production mainly occurs in soil
- Gram-negative bacteria
- Group of bacteria
- Gas producer (CO₂)

Apparatus:

- Pipettes
- Bunsen burner
- Incubator





- Dilution tubes
- Petri dishes
- Refrigerator
- Autoclave
- Spirit lamp

Purpose of Microbiological test:

- To ensure the safety of consumers health
- To ensure there is no contamination
- To ensure proper C.I.P

Procedure:

1. 1st of all make a ringer solution or saline solution by water and salt (Such as sodium chloride, potassium chloride, calcium chloride etc.)
2. Then pour them in the dilution tube then heat them until boil and remove from heat & let them cool
3. After that Spirit lamp is used to sterilize the pipette every-time before when use took a sample into the petri dish.
4. For coliform take 0.5ml and for total count take 1ml milk into the ringer solution and shake it to dilution the solution





Figure 13: Microbiological test

<http://www.agrimoon.com/estimation-of-snf-in-pasteurized-milk-by-specific-gravity-method/>

5. Then take 1ml from the dilution solution into another ringier solution and dilute them
6. Then take 1ml from it and transfer it into a petri dish.
7. Then transfer red agar into the sample containing petri dish for coliform but transfer white agar into the sample containing petri dish for a total count
8. Adding red agar 2 times is good for the growth of bacteria 9. Then keep them in the incubator at 40 to 420C for 18 hours.
10. After 18 hours count the bacteria by open eyes.
11. 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.
12. But for coliform count the colony and write them in the note.
13. If any unexpected result found then warn the operators to make sure proper C.I.P next time.



Chapter 06

Results & Discussion





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.

CLR Test:

Milk-vita Tested milk's specific gravity was 1.0286 which means no water was added in it.

The specific gravity of milk varies 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 raise the density of milk by lying people.

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.

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.

Salt Test:

Salt Positive (+) = Yellow color





Salt Negative (-) = Brown color

The 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.

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.

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.

Microbiological Test:

Total bacterial count was 18thousand/ml. 30 to 35 thousand total bacterial count is acceptable. A coliform count was 8/ml. According to standard coliform, count range should be less than 10/ml is acceptable. Proper Pasteurization is necessary to kill these micro-organisms.

C.I.P Test:

Positive (+) = Pink color

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

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





Conclusion:

This internship program of milk-vita helped to learn lots of things about dairy products. Learn about milk process and variety test. 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 the processing of some dairy products such as pasteurized milk, chocolate milk, ice-cream, Laban, yogurt etc. also know how to maintain milk long time. 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 has been learned there. Hopefully, during this internships, the knowledge gathered about doing products. Especially the information about BSTI standards of different doing products would be helpful in the future life. Also, knowledge about how to work in an industry, and learn about how to build up a network in a corporate job. And culture of a job market. Also, know the rules and regulation of the industry.





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