Internship Report
On

Quality Control Assurance & Production of Dairy Products
at
Fancy Dairy and Food Products Ltd
Chowbari, Kamarkhonda, Sirajganj

Submitted to

Ms. Fouzia Akter
Head
Department of Nutrition and Food Engineering
Daffodil International University

Supervised by:

Dr. Sheikh Mahatabuddin
Associate Professor
Department of Nutrition and Food Engineering
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Submitted By

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ID: 191-34-872
Department of Nutrition and Food Engineering
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Submission date: 09.08.22

LETTER OF TRANSMITAL

Date:

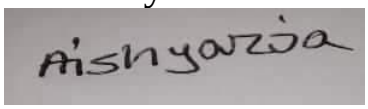
Ms. Fouzia Akter
Assistant Professor & Head
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject: Submission of Internship report

Dear Sir,
I am happy to inform that I have completed my internship work on **"Quality Control Assurance and Production of Dairy Products"** in "Fancy Dairy and Food Products Ltd for the partial fulfilment of the B. Sc. degree in Nutrition and Food Engineering. I have prepared the report to include all the process I have learned during this internship program for 3 months. During my internship period in worked under the supervision of Dr. Sheikh Mahatabuddin, Associate professor of the Department of NFE, DIU and MD Shahidul Alam AGM (Assistant general manager) Fancy Dairy and Food Products Ltd.

This internship gave me both academic and practical exposure. In this time, I have gained knowledge about the organizational culture and behavior of a prominent consumer product producing organization of the country.

Sincerely Yours



ID: 191-34-872
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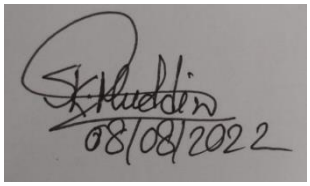
Faculty of Allied Health Sciences (FAHS).
Daffodil International University (DIU).

CERTIFICATE OF APPROVAL

I am pleased to certify that the internship report on **"Quality Control Assurance and Production of Dairy Products"** in Fancy Dairy and Food Products Ltd conducted by **Aishyarja Chakrabarty (ID NO: 191-34-872**) a regular student of the Department of Nutrition and Food Engineering has been approved for presentation, defense and viva-voce.

I am happy to certify that the data and the findings in this report are authentic work of **Aishyarja Chakrabarty.** I strongly recommend the report presented by **Aishyarja Chakrabarty** for further academic recommendations, defense and viva-voce. **Aishyarja Chakrabarty,** bears a strong moral character and well personality.

I wish her a successful life.



Ms. Fouzia Akter
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ACKNOWLEDGEMENTS

First of all, I would like to express my heartiest gratitude to almighty Allah for his mercy extended to completing my internship report on "Quality Control Assurance and Production of **Dairy Products** in "**Fancy Dairy and Food Products Ltd**". Practical experiences are also needed in parallel with the academic knowledge to fill the gap of theoretical knowledge.

My Deep gratitude and sincere thanks to the honorable Dean, Faculty of Allied Health Science, **Professor Dr. Abu Naser Zafar Ullah** and associated Dean, **Professor Dr. Md. Bellal Hossain,** for their kind cooperation and to accept this, Degree.

I am encouraged to take this privilege to deliver my gratitude to each and every people who are involved with me in every phase of my works. I am very grateful to **Ms. Fouzia Akter,** Head of the Department of Nutrition and Food Engineering, Daffodil International University.

I am deeply indebted to my Supervisor **Dr. Sheikh Mahatabuddin,** Associate Professor,Department of Nutrition and Food Engineering, Daffodil International University, for his whole-hearted supervision during my organizational attachment period.

I would like to express my warmest thanks to all **NFE Faculty members** for their countless inspiration and encouragement during the student life.

I am expressing my deep gratitude to MD Shahidul Alam, Assistant General Manager Production and Quality, Senior Officer. Quality Control "**Fancy Dairy and Food Products Ltd**". **Md. Kabir Hossain** Production Manager, morning fresh **"Well Food",** and others assistant quality control officer of **Fancy Dairy and Food Products Ltd to** give me an opportune

EXECUTIVE SUMMARY

This report is prepared on the basis of my three-month practical experience at the Fancy Dairy and Food Products Ltd., Bangladesh. This internship program exposed me about the practical knowledge of Bangladesh's dairy management system. It is a modern and forward-thinking enterprise that supplies milk and milk products across the country. Fancy Dairy and Food Products Ltd. is both a service and a business enterprise. It is one of Bangladesh's most important milk industries. This report was written based on my observations and work experience at the company. Although the company has various divisions and departments, I was only given the opportunity to work in the "Dairy Management System."

Fancy Dairy and Food Products Ltd. offers these opportunities for student internships. This internship work was done to come to a conclusion on the "Dairy Management System" study. The report also includes recommendations and conclusions based on my observations, which I believe might improve the organization's environment if implemented.

Table of Content

Chapter- two

Introduction

Bangladesh is a primarily agriculture dependent country. About 84.4% of population leave in rural areas. In addition the world population increasing geometrically which increase the demand of milk and milk produce rapidly. While public milk production can only cover about 13% of current milk consumption. Which implies that we need to enhance the milk production facilities with high milk yielding cattle. Recently most of the business group started their agribusiness that must include dairy farm. Therefore the production of milk and milk products are increasing day by day. Note: definitely we need to setup more milk base industries with state-of-the-art technologies and ensure the standard supply chain management.

The new food development technologies have been developed and scientist around the world working hard to advance these fields as rapidly as possible. Moreover, dairying is the most established occupation in Bangladesh's everyday setting, its development is hindered by a variety of challenges. The article is organized as follows: in the first segment, foundation data on the Bangladesh economy is provided, and the current condition and potential for expanding the dairy company is depicted.

Fancy Dairy and Food Products Ltd

❖ **Dairy products**

- Raw Milk
- pasteurized Milk
- Flavored Milk
- Sweet curd
- Sour curd
- Labang
- Ghee
- Mattha

Chapter- Three

Manufacturing Procedure & Flow diagram of:

- pasteurized Milk
- Sweet curd
- Sour curd
- Labang
- Mattha
- Ghee

Manufacturing Process of pasteurized Milk

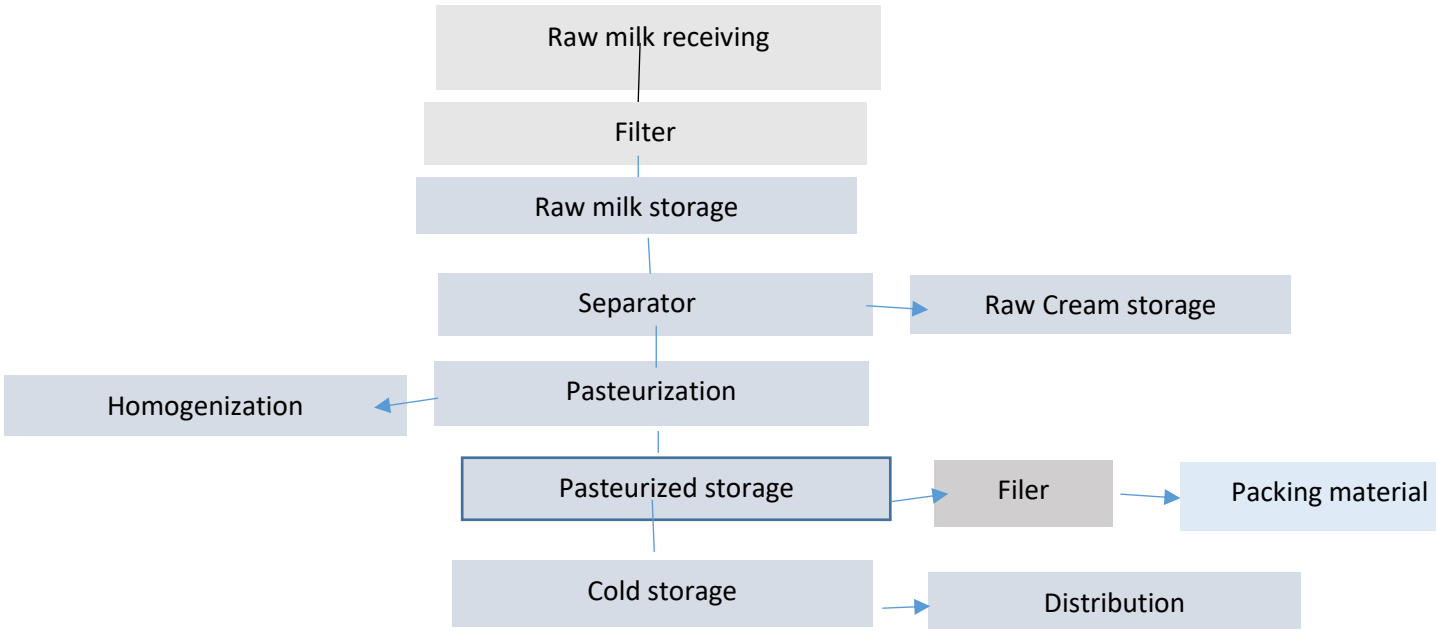
Ingredients

Milk

Equipment's

- Milk weighing and receiving tank.
- Milk cooling system.
- Milk storage tank.
- Milk pasteurizing system.
- Pasteurized milk filling system

❖ Flow Diagram of Manufacturing Process:



Flow Diagram of pasteurized Milk Manufacturing Process

Manufacturing Process of Sweet curd

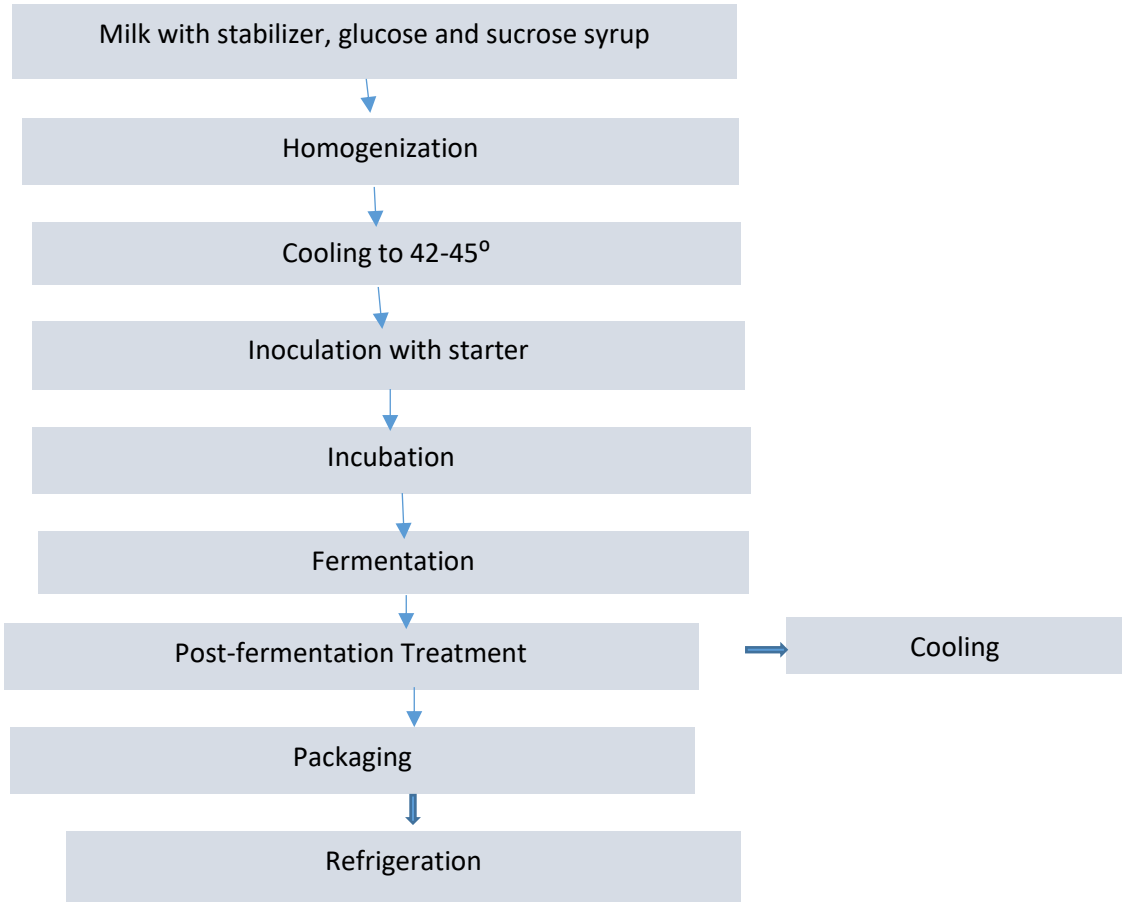
Ingredients

- Milk.
- Sugar.
- Lactic culture

Equipment's

- **A boiler.**
- **An incubator.**
- **A kettle.**
- **A pump**

❖ Flow Diagram of sweet curd Manufacturing Process:



Manufacturing Process of Sour curd

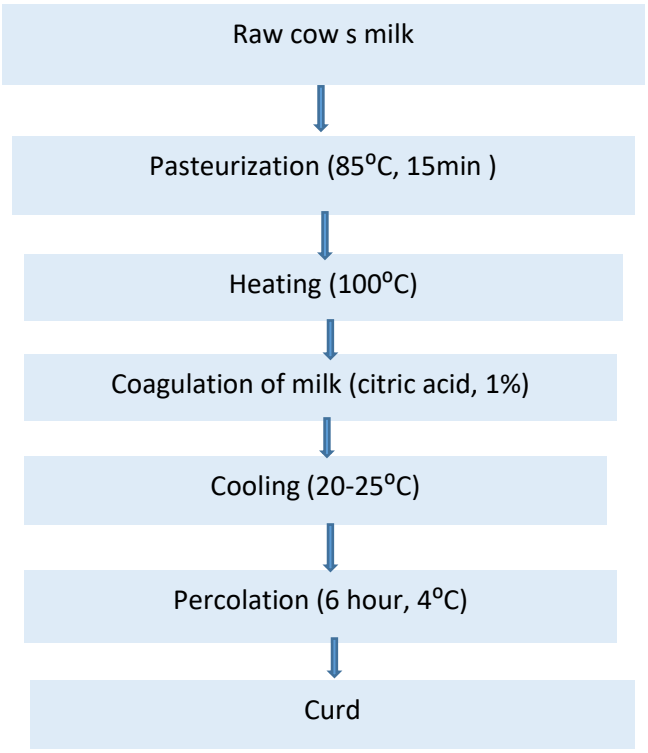
Ingredients

- Milk.
- Lactic culture.

Equipment's

- **A boiler.**
- **An incubator.**
- **A kettle.**
- **A pump**

❖ Flow Diagram of Manufacturing Process:



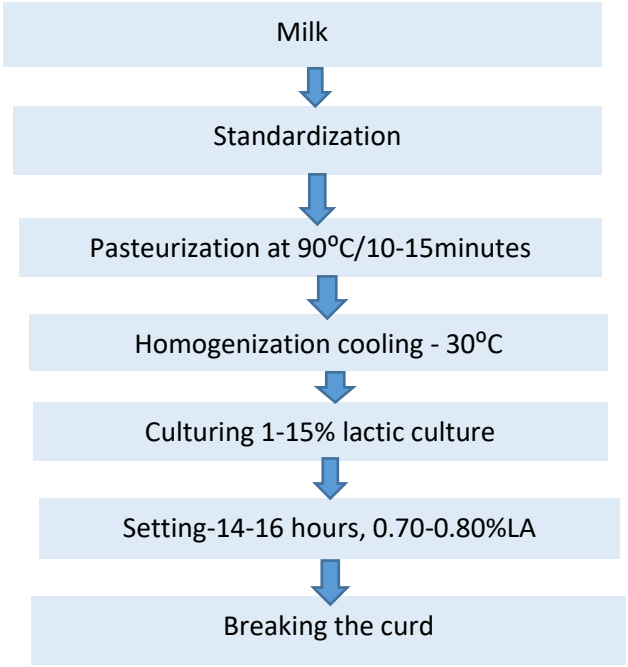
Flow Diagram of sour curd Manufacturing Process

Manufacturing Process of Matha

- Sour Curd.
- Sugar.
- Lactic culture.
- Stabilizer.
- Salt.
- Water .

- Measuring balance.
- Automatic Sealing Machine.
- Date-Coding Machine.

❖ Flow Diagram of Manufacturing Process:



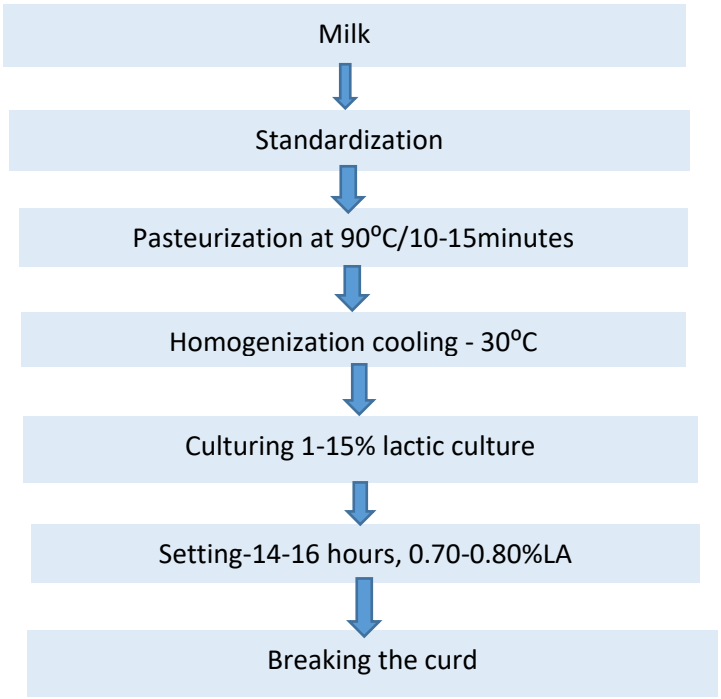
Flow Diagram of Matha Manufacturing Process

- **Manufacturing Process of Labang**

- Sour Curd.
- Sugar.
- Lactic culture.
- Stabilizer.
- salt .
- water.
- Bit salt.

- Measuring balance.
- Automatic Sealing Machine.
- Date-Coding Machine

❖ **Flow Diagram of Manufacturing Process**



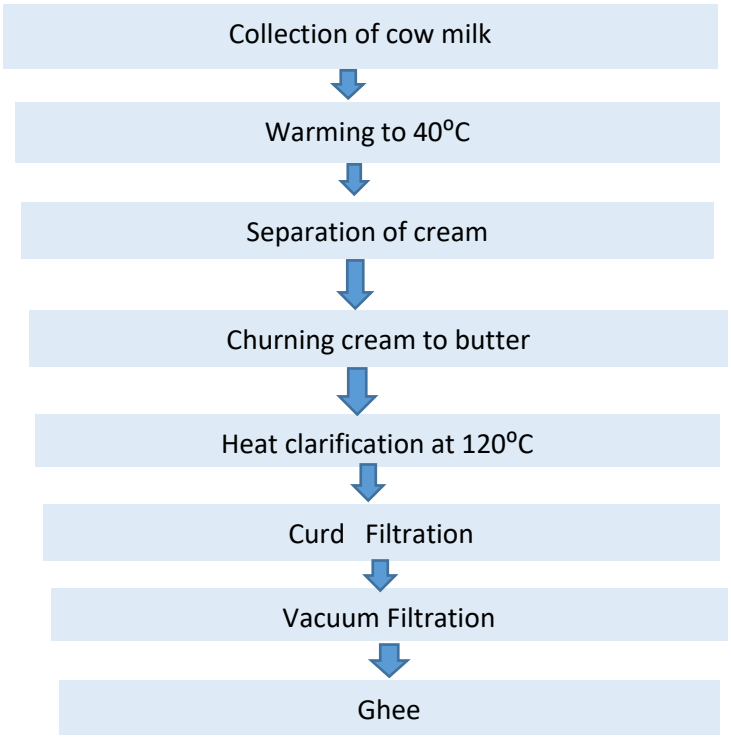
Flow Diagram of Labang Manufacturing Process

Manufacturing Process of Ghee

Milk

- Measuring balance.
- Cram Separation machine.

❖ Flow Diagram of Manufacturing Process



Flow Diagram of Ghee Manufacturing Process.

Chapter- Four

Quality Control
And
Testing

Raw milk test

1. **Organoleptic test of milk**

   Color: color of milk cream white.

   Texture: Normal milk is free following**.**

   Flavor: flavor of milk is pleasant.

2. **Chemical test of milk**

   a. Fat test

   b. CLR test

   c. Acidity test.

   d. Alcohol test.

   e. COB test.

a. Fat test

Necessary chemicals:

- Sulfuric acid (93%)
- Amyl Alcohol (commercial)

Necessary Equipment:

- Pipette 10.75ml.
- Auto measuring device 1ml.
- Auto measuring device 1ml.
- Butyrometer cork.
- Centrifuge machine.

Test Procedure

- 10 ml of sulfuric acid should be placed in a butyrometer.
- Add 10.75ml of methyl alcohol, then thoroughly shake.
- After that, centrifuge the butyrometer for 5 minutes in the machine.

Result

- Use the butyrometer's indication mark to adjust the fat layer.
- Take fat % from the scale mark on the butyrometer.

b. Corrected Lactometer Reading (CLR)test

Necessary chemical:

No chemical use.

Necessary Equipment:

- Measuring
- Thermometer.
- Lactometer.
- Beaker250ml.

Procedure

- Take 150ml – 200ml of milk in a beaker.
- Heat the milk in water bath at 20ºc
- Put enough milk in the cylinder to fill it.
- After that, place the lactometer into the cylinder.
- Take the lactometer's mark as your result.

Calculation:

If the temperature is higher than normal, we compute CLR in the following manner:

Let us consider the lactometer reading at 30ºc is 28

Temperature increase = (30-20) ºc= 10ºc

So, the CLR =28+(10*0.2)

=28+2

=30

If the temperature is below standard temperature, then we calculate CLR by the Following way:

Let us consider the lactometer reading at 10ºc is 32

Temperature decrease = (20-10) ºc=10c

= 32 – (10*0.2)

= 32-2

=30

Result: Corrected lactometer reading is 30

c. Acidity

Necessary Chemicals:

- Sodium Hydroxide (0.1N).
- Phenolphthalein

Necessary Equipment:

- Beaker 100ml.
- Pipette10ml.
- Burette
- Burette stand

Test Procedure:

- Take 9ml of milk in a beaker.
- Phenolphthalein indicator, 1 ml, added.
- Titrate until the color turns rose or pink using 0.1 N sodium hydroxide solution. 30 seconds must pass while the color stands.

Calculation: Consider first burette reading to be 10.0 and second burette reading to be 11.5 following titration.

Then acidity = (11.5-10.0)/10

=1.5/10

= 0.15

Result: Acidity of the milk is 0.15

d. Alcohol test

Necessary Chemicals:

- Ethyl Alcohol

Necessary Equipment:

- Test Tube
- Pipette

Test Procedure:

- Take 2ml of milk in test tube.
- Add 2ml of Ethyl Alcohol (68%/75%) and shake well

Result:

- If the solution becomes heterogeneous and adheres to the test tube's inside surface, the milk is alcohol-positive.
- Milk is alcohol-negative if the solution becomes homogenous and does not adsorb on the test tube's inside surface.

e. Clot on Boiling (COB)

Necessary Chemicals:

- No Chemical use

Necessary Equipment:

- Test tube
- Pipette.
- Test tube holder.
- Spirit lamp.

Test Procedure:

- Put 5 ml of milk in the test tube.
- Spirit lamp for 1-2 minutes to heat the test tube.

Results:

If the solution becomes heterogeneous and adheres to the test tube's internal surface, the milk is COB positive.

3. **Adulteration test of milk :**
   a. **Formalin test**
   b. **Soda test.**
   c. **Sugar test**
   d. **Salt test.**

a. Formalin test

Necessary Chemicals:

- Sulfuric acid.

Necessary Equipment:

- Test tube.
- Pipette

Test Procedure:

- Fill a test tube with 10 ml of milk.
- Slowly pour in 5 cc of sulfuric acid.

Result:

If violet hue develops between two layers, the milk has been tampered with to include formalin.

b. Soda Test :

Necessary Chemicals:

- Alizarin Solution.

Necessary Equipment:

- Test Tube.
- Pipette

Test Procedure:

- Fill a test tube with 2 ml of milk.
- Add 2 ml of alizarin, then thoroughly shake.

Results:

The milk is soda positive if the hue shifts to light violet.

c. Sugar Test :

Necessary Chemicals:

- Concentrate Hydrochloric.
- Resorcinol.

Necessary Equipments:

- Test tube.
- Pipette.
- Spirit lamp/water bath.

Test Procedure:

- Take 10ml of milk in a test tube.
- Add 5ml of con, Hydrochloric acid.
- Now add 0.1 gm of Resorcinol and shake well.
- After that, soak the test tube for five minutes in water.

Result: If the color changes to red then the milk is adulterated with sugar.

Salt test :

Necessary Chemicals:

- Silver Nitrate.

Necessary Equipment:

- Test tube.
- Pipette.

Test Procedure:

- Fill a test tube with 5ml of silver nitrate.
- Shake thoroughly after adding a few of drops of potassium dichromate.

Result: If the milk's color changes to turn yellow, salt has been added to adulterate it.

Chapter- Five

Microbial Test

Microbiological test of milk

a. **Total count :**

Necessary Chemicals:

- Plate count agar.
- Ringer solution.

Necessary Equipment:

- Test tube.
- Pipette 1ml.
- Petri dish.
- Spirit 1amp.
- Glass market.

Chemical Preparation:

- **PCA media:** Fixed amounts of media and water are combined, and the mixture is heated until the media is completely dissolved. Sterilize the media in the autoclave after pouring it in conical flux.
- **Ringer solution:** To prepare ringer media, four types of salt are required. 9 ml of the medium are placed in a test tube, together with a predetermined amount of salt and water, and the media is autoclave sterilized.

Test Procedure:

- Leveling the test tube and petri dish by glass marker.
- Take 1ml of milk in 9ml of ringer media and shake well. this is

- Take 1ml solution from test tube and mixed with another 9 ml ranger solution. This is called 10^{-2} dilution.
- Take 1ml sample from 10^{-2} dilution tube pour in the petri dish and leveling by glass marker.
- Warn the PCA media at 50ºc and 15ml of media pour in petri dish and mix well.
- After 20 hours calculate the amount of colony the petri dish.
- Place the petri dish in the incubator at 370 degrees Celsius after 20 to 25 minutes, when the media has cooled.

Calculation:

Total colony=No. of colony per ml milk*Dilution factor

Result

Total coliform:

Necessary chemicals:

- Plate count agar.
- Ringer solution.

Necessary Equipment:

- Test Tube.
- Pipette 1ml.
- Petri dish.
- Spirit lamp.
- Glass market.

Chemical Preparation:

VRBA media: A fixed quantity of media combined with a fixed quantity of water, then heated until the mixture completely dissolves. Sterilize the media in the autoclave after pouring it in conical flux.

- **Ringer solution:** To create ringer media, four different types of salt are required. Take a fixed amount of self together with a fixed amount of water, along with 9ml of medium in a test tube that has been autoclave sterilized.

Test Procedure:

- Leveling the test tube and petri dish by glass marker.
- Take 1ml of milk in petri dish by sterile pipette.
- Pour approximate 20ml VRBA media in petri dish at temp of media is 45-50ºc.
- Rotate the petri dish in a clockwise direction once the media has totally cooled.
- After 20-25 minutes when the media is cooled then place the petri dish in the incubator at 37ºc.
- After 24 hours calculate the amount of colony in the petri dish.

Calculation: Total :

Total coliform = Number of colony per ml milk * dilution factor

Certification:

Fancy Dairy & Food Products Ltd has BSTI certificate.

Conclusion:

It's a fantastic opportunity and adventure for me to complete my internship in Fancy Dairy & Food Products Ltd Milk is in high demand, and there are plenty of job opportunities in our country. Working with them is a pleasure for me. This internship provided me with both academic and practical experience. During this time, I've learned about the organizational culture and behavior of a well-known purchaser product manufacturing firm in the country. Finally, this internship allowed me to strengthen my network inside the workplace environment, I am grateful to Daffodil International University's Department of Nutrition and Food Engineering for providing me with such an opportunity to gain knowledge and experience.