**Traditional Methods of Milk Preservation and their Impact on Milk Components**



**Sourav Sen**

Roll No. 0118/05

Registration No. 492

Session: 2018-2019

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**This is to certify that we have examined the above Master’s thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made**

**-----------------------------------------------**

**Supervisor**

|  |
| --- |
|  **Professor Dr. A. K. M. Humayun Kober** |
| **Department of Dairy and Poultry Science** |

**-----------------------------------------------**

**Co-supervisor**

**DR.** [**Nasima Akter**](https://cvasu.ac.bd/user-profile/104) **Assistant Professor**

**Department of Dairy and Poultry Science**

**-----------------------------------------------**

**Professor** [**Dr. Mohammad Abul Hossain**](https://cvasu.ac.bd/user-profile/99) **Head &Chairman of the Examination Committee**

**Department of Dairy and Poultry Science**

**Department of Dairy and Poultry Science**

**Faculty of Veterinary Medicine**

**Chattogram Veterinary and Animal Sciences University**

**Chattogram-4225, Bangladesh**

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Sourav Sen

June 2020

*Dedicated to*

My FAMILY

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**LIST OF ABBREVIATIONS**

|  |  |
| --- | --- |
| **Abbreviations** | **Elaborations** |
| % | Percentage |
| °C | Degree Celsius |
| °F | Degree Fahrenheit |
| < | Less than |
| > | Greater than |
| 0.1N | 0.1 Normal |
| CMA | Chattogram Metropolitan Area |
| CVASU | Chattogram Veterinary and Animal Sciences University |
| DLS | Department of Livestock Services |
| et al. | And his associates |
| etc. | Etecetera |
| FSH | Follicle stimulating hormone |
| GDP | Gross Domestic Product |
| H2SO4 | Sulphuric acid |
| HF | Holstein Friesian |
| BSTI | Bangladesh standard and testing institute |
| hrs | Hours |
| kg | Killogram |
| L | Liter |
| APT | Alcohol precipitation test |
| mg | Milligram |
| ml | Millilitre |
| sq. km | Square Kilometer |
| COB | Clot on boiling |

**Abstract**

Milk is a good medium for the growth of many microorganisms, since it contains all the necessary nutrients and also provides a suitable physical environment; it is therefore, a perishable food, highly susceptible to microbial spoilage. So milk preservation is a decisive factor for milk producers and for the milk processing industries. To fulfill the statement, a well established short time milk preservation technique need to be occupied by the local milk producers of Bangladesh. By aiming this regards the present study was conducted. In this study NaHCO3 used as chemical preservative and frozen water bottle were used for preservation aiming at traditional methods. Milk samples were collected from commercial dairy farms and milk selling centers, initial quality were evaluated using chemical and microbial tests. Then, collected samples were preserved at room temperature (28-35°C) with 0.0% (control), 0.1%, 0.2% and 0.3% NaHCO3. The quality of milk samples were measured at every hour interval until spoiled. On the other hand, 1 liter (25%), 1.5 liter (16.67%) and 2 liters (12.5%) volume milk were preserved with a 250 ml frozen water bottle and the quality of milk samples were measured at every hour interval until spoilage. Alcohol precipitation test (APT) was performed to check the shelf life and acidity percentages were measured to check the developed acidity. In case of 0.1%, 0.2% and 0.3% NaHCO3 added milk positive results for APT were obtained after 11 hours, 13 hours and 14 hours, respectively. The highest titratable acidity was observed was 0.311 in case of 0.1% NaHCO3 added milk after 14 hours of addition and the lowest was observed 0.123 in case of 0.3% NaHCO3 added milk after 1 hour of addition (p<0.001). In case of 1 liter (25%), 1.5 liter (16.67%) and 2 liters (12.5%) volume milk positive results for APT were obtained after 5 hour, 4.5 hour and 4 hours, respectively. In case of frozen water bottle immerged milk, the highest titratable acidity observed was 0.256 (after 5.5 hours of addition) and the lowest was 0.140 (after half hour of addition) (p<0.01). From the result it can be concluded that, for the preservation of milk, NaHCO3 and frozen water bottle can be used in rural areas where pasteurization and chilling facility are not available. 0.3% NaHCO3 is enough to maintain the shelf life of raw milk up to 13 hours and 250ml frozen water bottle can enhance the shelf life of 1 liter (25%) milk up to 5 hours.

***Key words:*** Milk, Preservation, NaHCO3, Frozen water bottle, Titratable acidity, Alcohol precipitation test.