# EVALUATION OF PHYSICAL, CHEMICAL AND MICROBIAL QUALITY OF TONED MILK AVAILABLE IN BANGLADESH



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A thesis submitted in partial fulfilment of the requirements for the degree of Master of Science in Dairy Science

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December 2023

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

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PLAGIARISM VERIFICATION

Title of Thesis: Evaluation of Physical, Chemical and Microbial Quality

of Toned Milk Available in Bangladesh

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The thesis may be considered for the evaluation.

**Professor Goutam Kumar Debnath** 

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#### **Abstract**

Toned milk is the milk obtained by adding water and skimmed milk powder to whole milk where fat content shall be more than 2% but less than 3.5% and solids-not-fat (SNF) should be minimum 9.0%. An attempt was made in this study to evaluate the quality of toned milk of three different brands (Aarong, Milk Vita and Farm Fresh) available in Bangladesh. The physical quality was evaluated by an expert panel to assess the colour and appearance, odour, flavour, and body. The chemical parameters including specific gravity, acidity, lactose, fat, SNF, total solids (TS), protein and casein content were evaluated. The microbiological parameters were total viable count and coliform count. In the case of specific gravity, SNF and TS, there were significant differences (p<0.05) among the brands. The specific gravity was higher in Aarong and Milk Vita toned milk (1.031±0.001) than in the Farm Fresh toned milk (1.030±0.001). The highest SNF% was found in Aarong toned milk (8.974±0.229) and lowest in Farm Fresh toned milk (8.529±0.144). The highest TS% was in Aarong toned milk (12.174±0.229) and lowest in Farm Fresh toned milk (11.729±0.144). The fat, acidity percentage, protein, casein and lactose content among three brands had no significant (p>0.05) differences. The fat% was the highest in Aarong toned milk (1.991±0.079) and the lowest in Farm Fresh toned milk (1.892±0.09). There were highly significant differences among the total viable count of bacteria of all brands of toned milk (p<0.01) though the values were within the range of Bangladesh Standards and Testing Institution (BSTI) standards. No coliform bacteria were detected irrespective of brands which indicated that good sanitary measures were adopted during the manufacture, packaging and storage. Although the available toned milks were of acceptable quality in terms of the physical, chemical, and microbial quality parameters except a few, the manufacturer should maintain the standard strictly.

**Keyword:** toned milk, fat, protein, lactose, acidity, bacteria, TVC, coliform