

## Designing Predictive Model for Microbial Load in Pasteurized Milk With Measuring Electrical Resistance (Impedance-Splitting Methods) and Survey on It's Correlation With Milk Titrable Acidity

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**Background & Objectives:** Measuring total microbial count of milk with conventional pour plate count Methods and comparing the results with standard limits is one of the routine tests in dairy factories. Achieving the results of total microbial count in minimum time is really important for confidence from the hygienic quality of products. So Impedance – Splitting Methods as a new technique for this purpose was considered in order to receiving the results in less time and as soon as possible. The main purpose of this study, was to evaluate the correlation between impedance detection time (IDT in hrs), total microbial population (log<sub>10</sub> N) and titrable acidity (0D) of pasteurized milk.

**Methods:** During 6 months, 100 samples of pasteurized milk were collected from different areas of Ahvaz in Khuzestan province of Iran and examined under sterile conditions. The total microbial count by pour plate technique and impedance – splitting Methods, also measuring milk titrable acidity were carried out based on the recommendations of Iran's Standard Institute and Industrial Investigation. Then the calibration curves of 3 methods and their equations were obtained by using Excel software.

**Results:** The calibration curves of methods were elaborated for total microbial count and impedance detection time, demonstrating a good correlation between the two methods (95.09%). According to the calibration curves, the correlation between impedance detection time and titrable acidity was 85.4%, also the correlation between total microbial count and titrable acidity was 93.27% for pasteurized milk samples.

**Conclusion:** Therefore, impedance measurement which is a more rapid, automated and less laborious methods than conventional total microbial count technique could be used like some developmental countries as an alternative methods for the rapid measuring the total microbial loads in pasteurized milk instead of conventional methods.

**Keywords:** Total Microbial Count; Impedance–Splitting; Surface Plate Count; Milk Titrable Acidity; Raw Milk; Pasteurized Milk