



# Effect of different preservatives on total bacteria count in raw milk for laboratory proficiency test



Yueh-Tung Chen<sup>1</sup>, Yi-Hsuan Chen<sup>1</sup>, Yi-Hsin Yeh<sup>1</sup>, Ming-Kuew Yang<sup>1</sup>, Jeng-Fang Huang<sup>2</sup>, Jen-Wen Shiau<sup>1</sup>, Po-An Tu<sup>1</sup>

<sup>1</sup>Northern Region Branch, Taiwan Livestock Research Institute, Ministry of Agriculture

<sup>2</sup>Taiwan Livestock Research Institute, Ministry of Agriculture

## Introduction

Since 1999, Taiwan has set a total bacterial count standard ( $<3 \times 10^6$  CFU/mL) for raw milk. However, bacterial counts can be affected by multiple factors, such as climate conditions, herd health, milking hygiene, and equipment efficiency. In cases of abnormal bacterial counts, disputes often arise between dairy factories and farmers. To address this, effective preservation methods are needed. This study evaluates the effect of two preservatives—Azidiol (AZ) and Bronopol (BR)—on bacterial count stability in raw milk under different storage conditions.

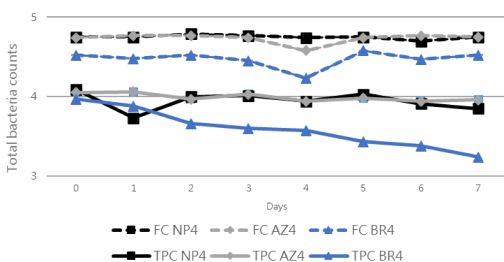
## Materials & Methods

- Preservatives tested:
  - ✓ Azidiol (AZ)
  - ✓ Bronopol (BR)
- Storage conditions:
  - ✓ 4°C (Refrigeration)
  - ✓ 25°C (Room temperature)
  - ✓ 37°C (High temperature)
- Bacterial count measurement methods:
  - ✓ Flow Cytometry (FossBactoScan FC)
  - ✓ Total Plate Counting (TPC) Method
- Observation period: 0 to 7 days

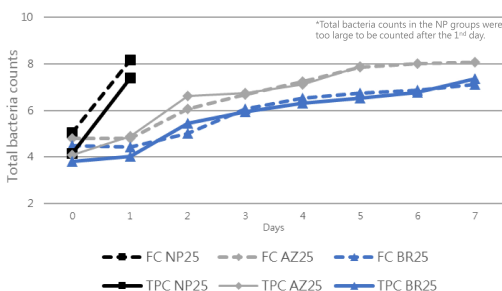
## Results & Discussion

- At 4°C:
  - ✓ AZ could effectively maintain the bacteria counts for 7 days in both detection method.
  - ✓ Bacterial counts after 7 days of storage using BR were significantly lower than the original values.
- At 25°C:
  - ✓ BR preserved bacterial counts for only 1 day.
  - ✓ AZ showed some preservation ability, but not as stable as at 4°C.
- At 37°C:
  - ✓ Neither preservative maintained bacterial counts beyond the same day of storage.

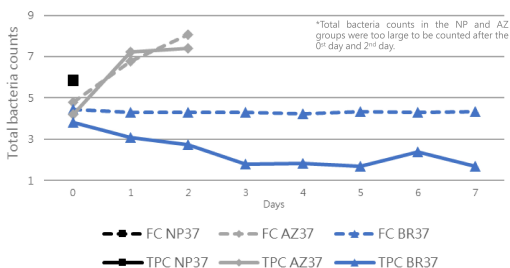
4°C Total bacteria counts in FossBactoScan FC and TPC



25°C Total bacteria counts in FossBactoScan FC and TPC



37°C Total bacteria counts in FossBactoScan FC and TPC



## Conclusion

- AZ is the preferred preservative for maintaining bacterial stability at 4°C.
- For unstable storage conditions, bacterial count testing within one day is recommended.
- These findings help dairy factories and farmers improve bacterial count accuracy and prevent disputes.