

Case study - Meat

Sampling and Homogenization Strategies Significantly Influence the Detection of Foodborne Pathogens in Meat.

Alexander Rohde, Jens Andre Hammerl, Bernd Appel, Ralf Dieckmann, and Sascha Al Dahouk.
BioMed Research International. 2015.

Overview

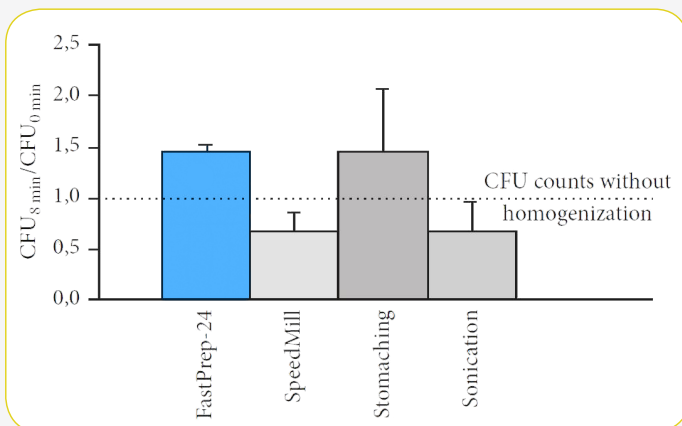
- **Keywords:** Food microbiology, pathogen identification, sampling, homogenization
- **Aim of the study:** Identification of an efficient food homogenization method for microbiological testing
- **Sample type:** Chicken breast, salami and meat paste
- **Material:** FastPrep-24™, Bagmixer 400, SpeedMill, Branson Sonifier 450, 6.35 mm ceramic beads, 50 ml tubes
- **Buffer:** 1% buffered peptone water

Protocol and Parameters

1. Samples were diluted 1: 10 in buffered peptone water (1.37 ml for FastPrep® homogenization)
2. Samples were placed in sterile Falcon 50 ml tubes filled with three 6.35 mm ceramic beads
3. Tubes were loaded in the FastPrep-24™ and processed at speed 5m/s for 30, 1 min, 2, 4 and 8 mins
4. Aliquots were diluted appropriately in buffered peptone water and plated twice in suitable dilution steps on selective medium
5. Colonies were enumerated after an incubation period of 24 h at 37 °C

Results

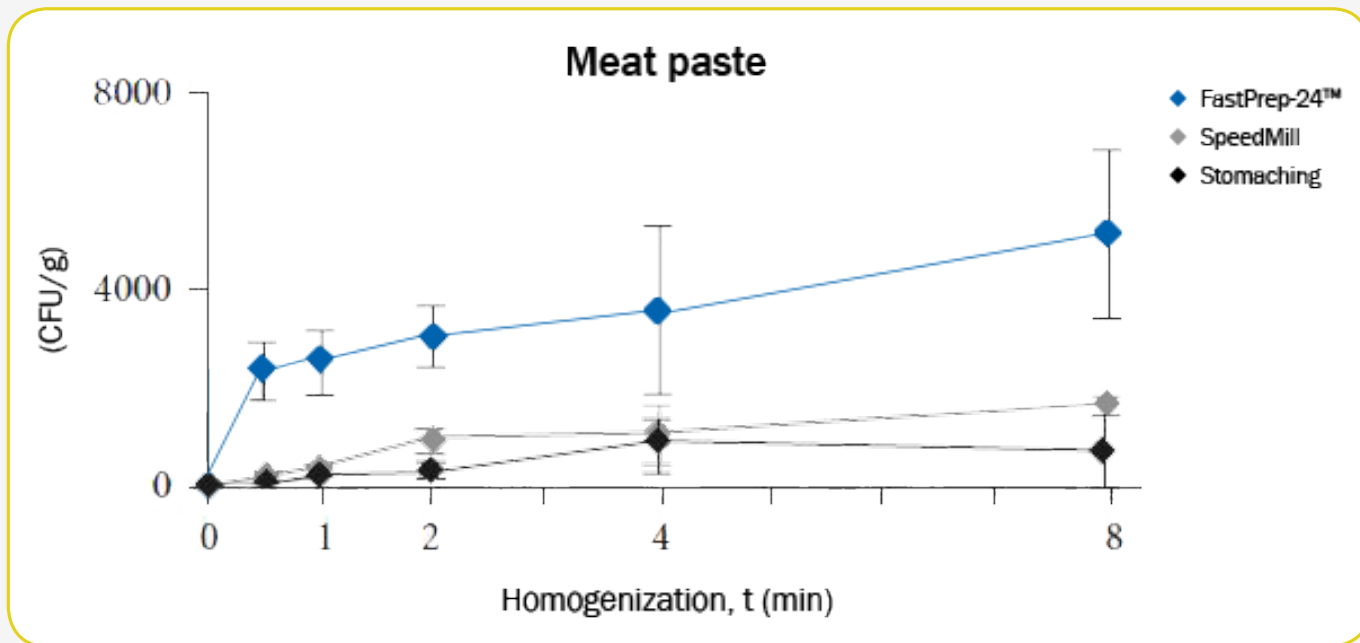
Effective surface pathogen detection with lower variability



Changes in pathogen detection of chicken surface contamination after homogenization. The indicated bars express the normalized pathogen concentrations released from spiked chicken breast samples after 8 mins of homogenization in relation to the CFU count after 20 sec of sole vortexing.

Results

Superior performance in detection of inner-matrix contamination



Homogenization of inner-matrix contamination. Release of *Salmonella* from whole cross sections of internally contaminated meat paste after pretreatment by FastPrep-24™, stomaching, and SpeedMill for 0, 30 s and 1, 2, 4, and 8 mins was monitored.

Conclusion

- The results of this study show that the FastPrep® homogenization method gives the best results with high reproducibility for detection of surface food contamination.
- For inner-matrix contamination, long treatments are required and only FastPrep-24™, as a large-volume homogenizer, produced consistently good recovery rates, extracting **seven times more pathogen after 8 mins than stomaching**.

Successful sample preparation using the MP Biomedicals FastPrep® product line has been highlighted in thousands of scientific articles. To access articles and other materials, visit www.mpbio.com/FastPrepLibrary.

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