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PROCESSING FRESH MUSSELS (*M. GALLOPROVINCIALIS*) BY *SOUS VIDE* TECHNOLOGY: EFFECT ON THE MICROBIOLOGICAL CHARACTERISTICS

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INTRODUCTION

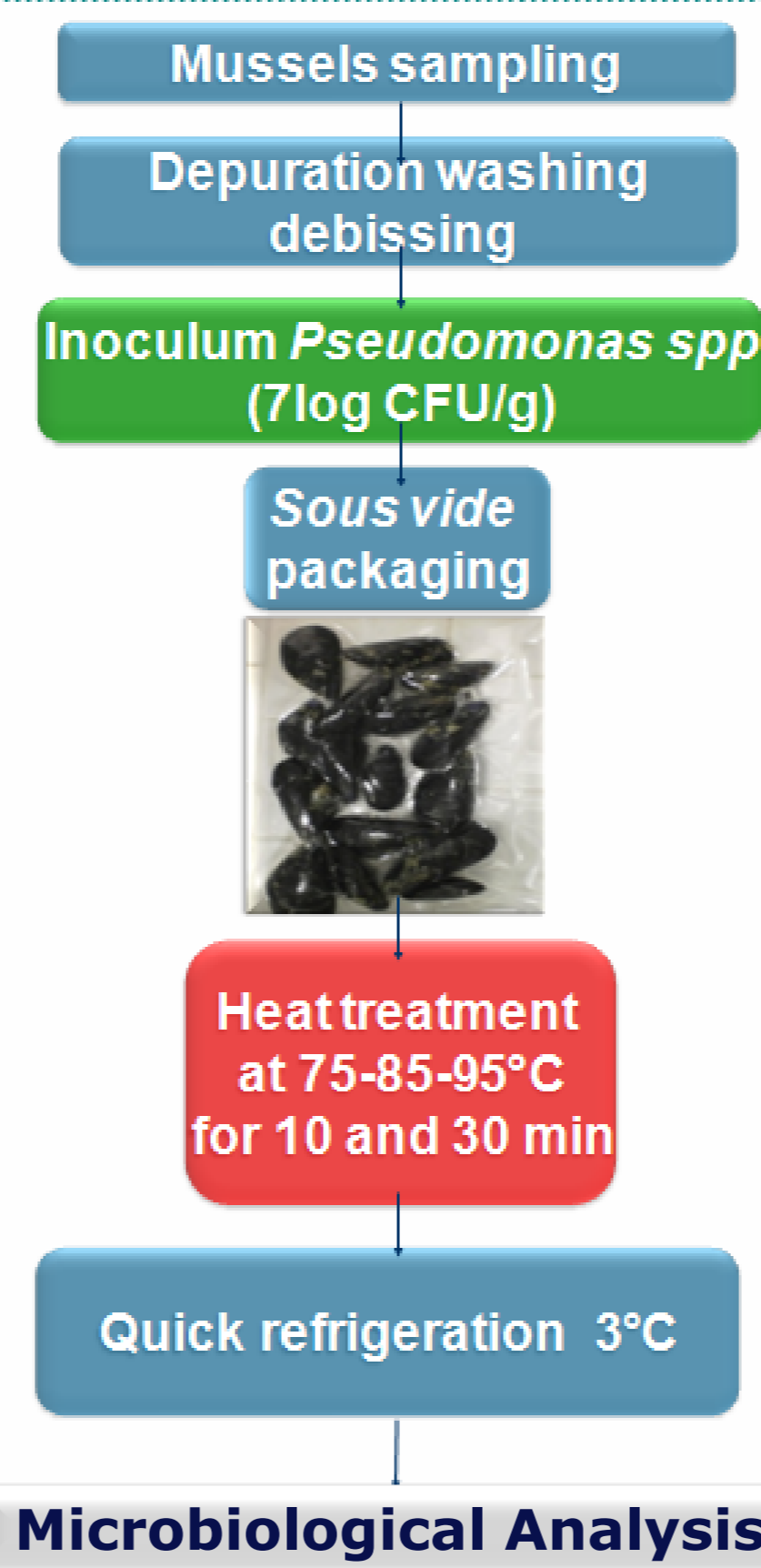
Sous-vide cook-chilled (SVCC) refers to food that is subjected to vacuum-pack and then mild heat treated under controlled conditions (t and T) and subsequently rapidly cooled and stored at chilled conditions until heated before serving (Rhodehamel, 1992; Hansen *et al.*, 1995). Few studies reported the application of this process for aquaculture products (Espinosa *et al.*, 2016; Shakila *et al.*, 2009), such as trout fillets (Gonzalez-Fandos *et al.*, 2004), salmon (Garcia-Linares *et al.*, 2004, Gonzalez-Fandos *et al.*, 2005; Diaz *et al.*, (2009) and carp (Can, 2011) and there is no evidence of the application of this technology in molluscs.

AIM

Evaluate the effect of SVCC technology on the microbiological characteristics of mussels (*M. galloprovincialis*).

MATERIALS AND METHODS

Trial 1 effect of *sous vide* cook and chill on inoculated mussels



Trial 2 effect of *sous vide* cook and chill on natural bacterial load



Analysis

Total Bacterial Count (TBC)
Lactic acid bacteria (LAB)
Clostridia sulphite reducing bacteria
Pseudomonas spp.
pH of homogenate
3 Packs per treatment
(15 mussels/pack)

Fig. 1 Experimental design and analytical determination.

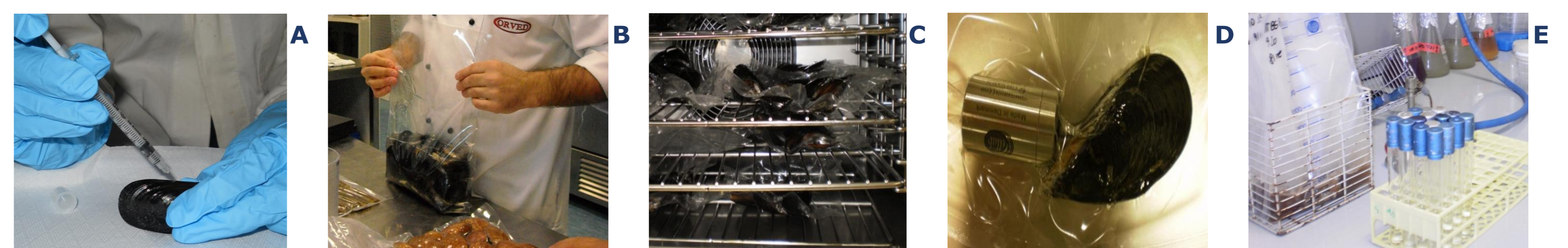
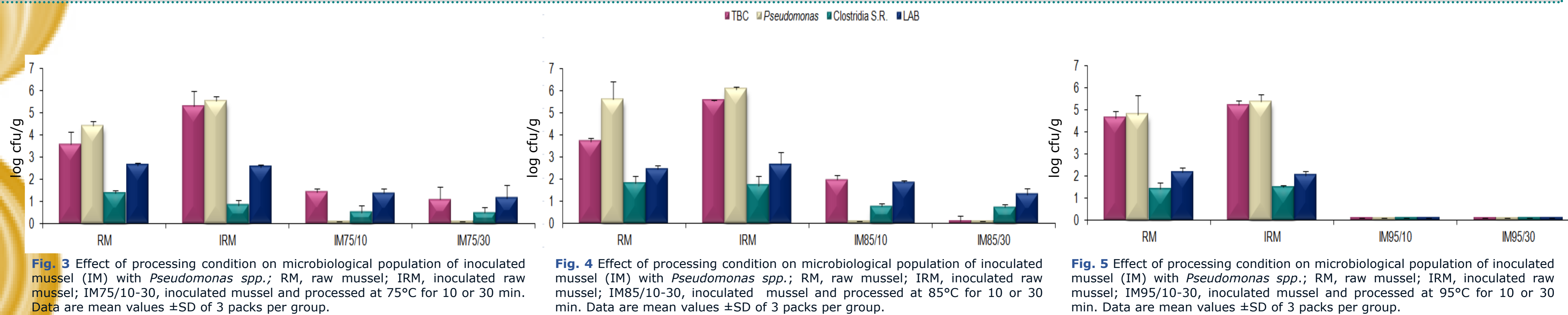


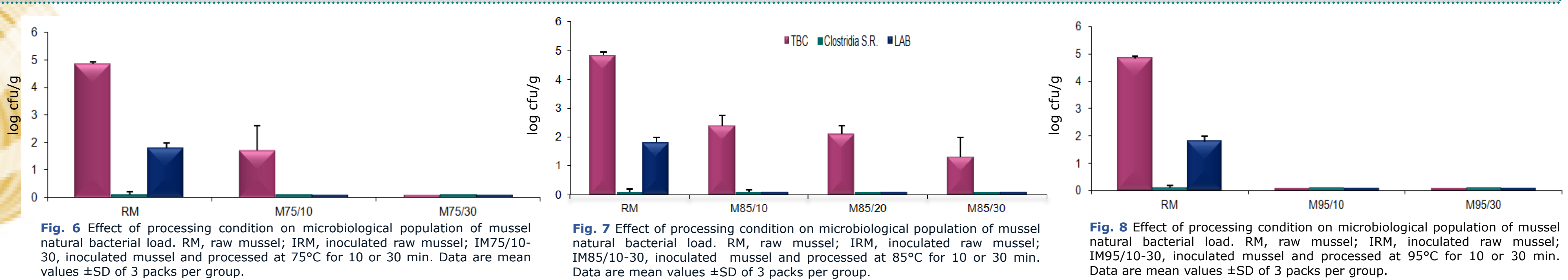
Fig. 2 Preparation of inoculated mussels (A), packaging (B), cooking (C), temperature monitoring (D), microbiological analysis (E).

RESULTS

TRIAL 1. EFFECT OF SOUS VIDE COOK AND CHILL ON INOCULATED MUSSELS



TRIAL 2. EFFECT OF SOUS VIDE COOK AND CHILL ON MUSSELS NATURAL BACTERIAL CONTAMINATION



- All t/T combinations resulted in a substantial reduction of the *Pseudomonas spp.* population (<1 log CFU/g) both in raw (4.9 log CFU/g) and experimentally inoculated (5.7 log CFU/g) mussels.
- The pH values (6.22) of the homogenate resulted not affected by the heat treatments (data not shown).
- Similar results were observed on natural microbial contamination of mussel. A TBC reduction (2.4 log and 3.5 log, respectively) was registered after treatment at 85 °C for 10 or 30 min, while the highest reduction (4.8 log) was observed at 95 °C for 10 min confirming the efficacy of *sous vide* cook treatments even for fresh mussels.

CONCLUSIONS

- The present study confirms the effectiveness of SVCC technology to reduce the microbial population present in raw mussels.
- Future research will be aimed to assess technological and sensorial traits of these products, as well as their stability both under refrigeration and thermal abuse conditions during storage.

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