

# Microbiological evaluation of berries and identification of target microorganisms



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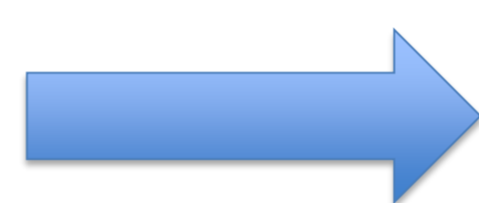
PORTO

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## Introduction

During recent decades, pre-prepared minimally-processed or fresh-cut fruit have become increasingly popular amongst European consumers. Berries are highly consumed fruits worldwide and the increasing consumption has led to the need for improved food safety in the berry fruit industry.



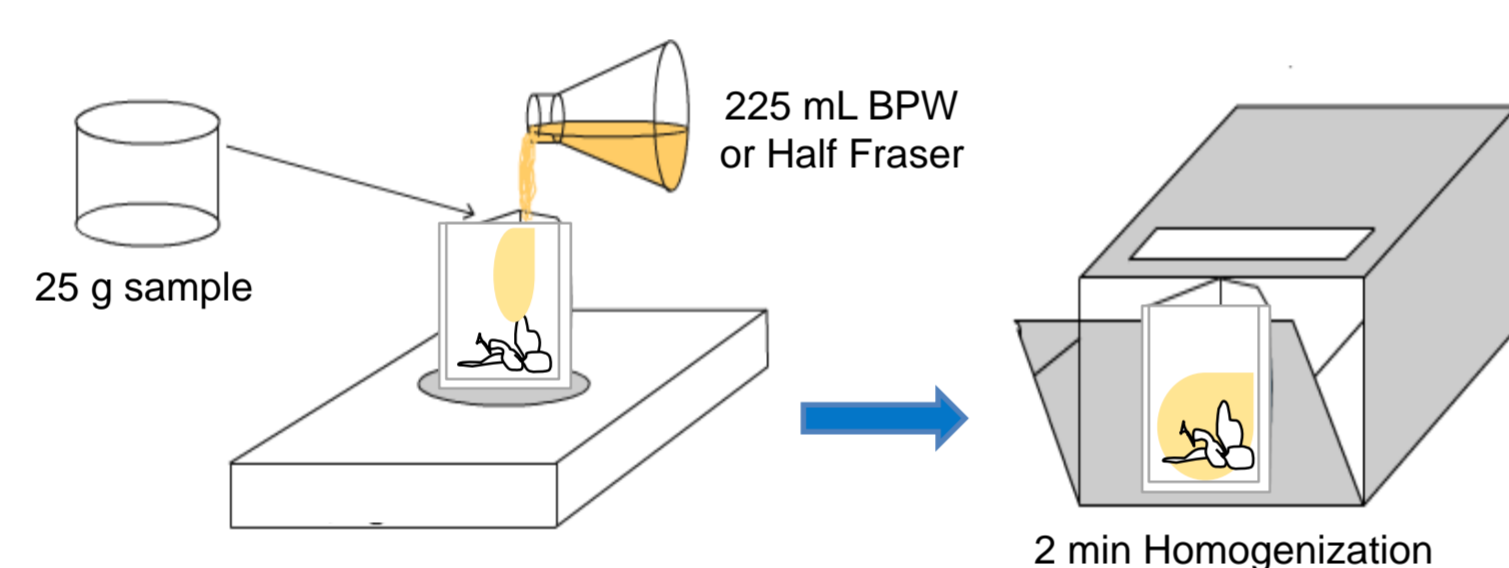
Production is a critical point in which fresh fruits could be contaminated

## Objectives

- To evaluate the microbiological quality of raw materials used in fruit processing by a Portuguese company.
- The results obtained will allow this company to set target microorganisms that must be controlled during processing.

## Methods

Microorganisms were detected and/or enumerated according to standard ISO methodologies.

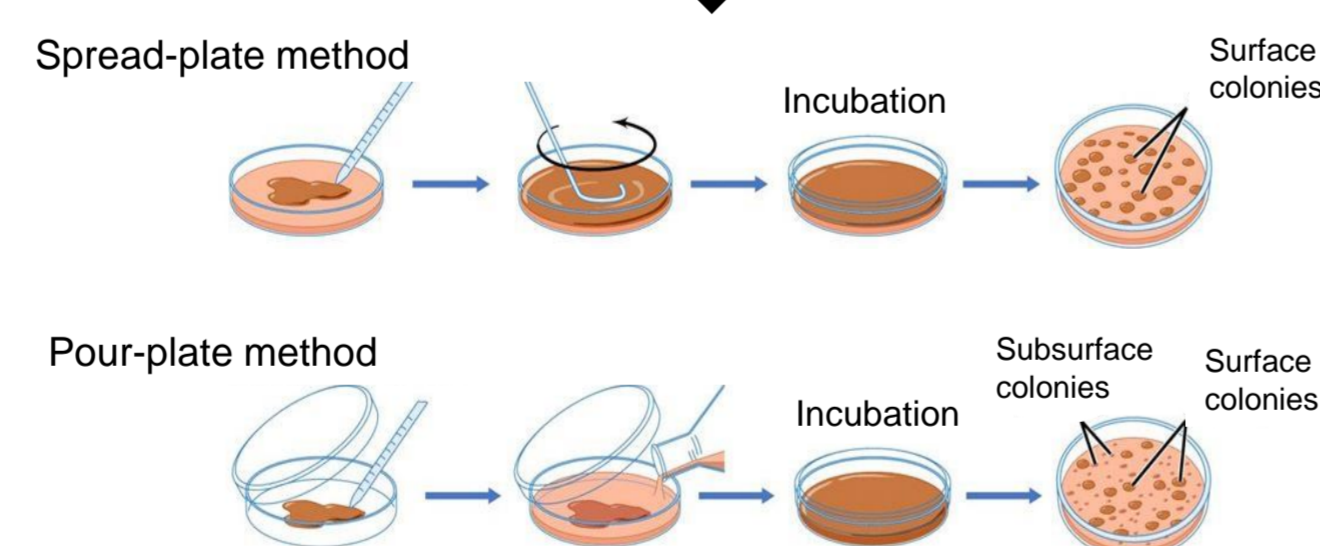


### Samples analysed

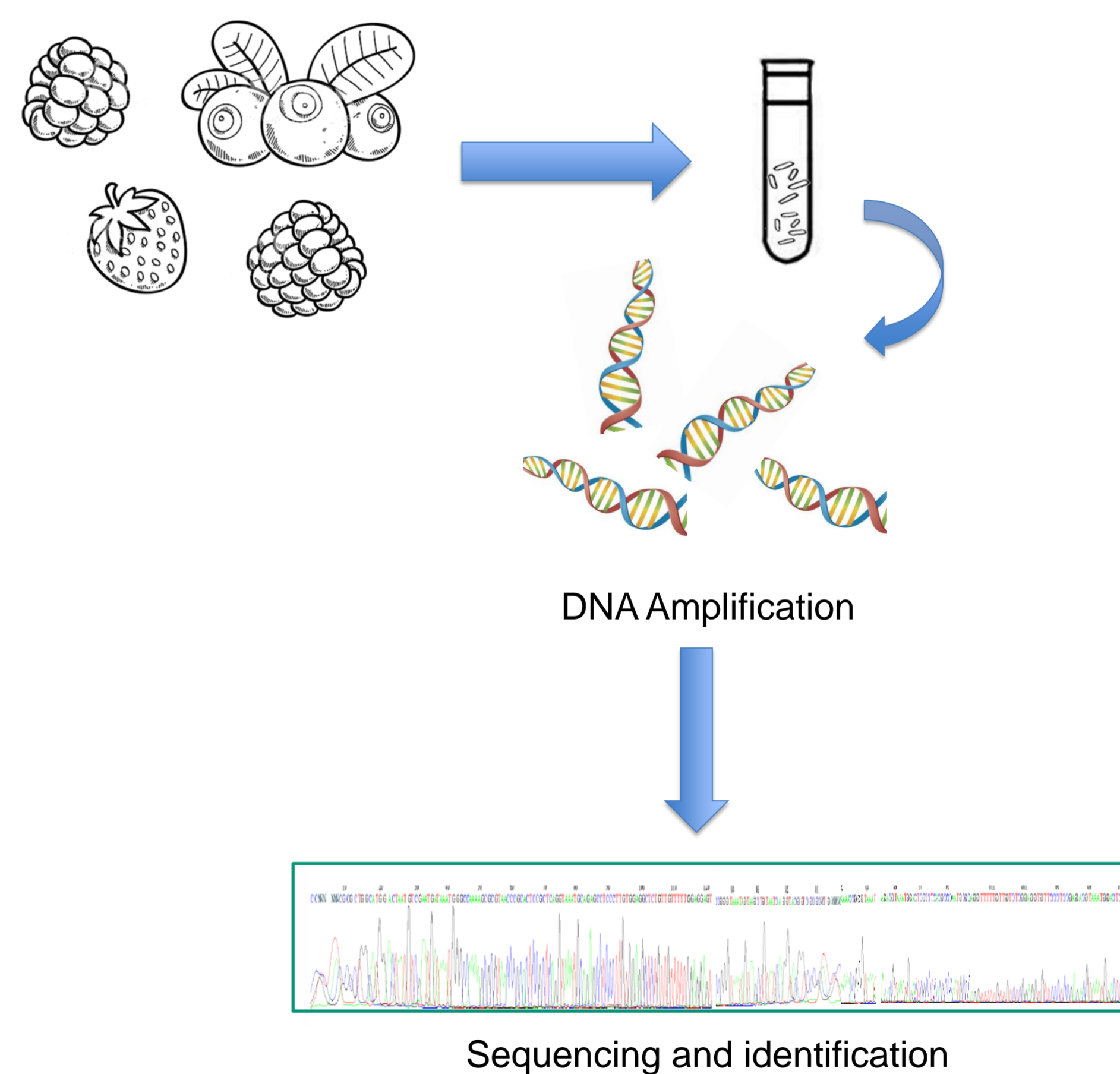
Strawberry  
Blueberry  
Raspberry  
Blackberry

### Microorganisms studied

*Escherichia coli*  
*Salmonella* spp.  
*Listeria monocytogenes*  
*Bacillus cereus*  
Sulphite-reducing clostridia  
*Staphylococcus aureus*



Identification by 16S rDNA sequencing.



## Results and Conclusions

- None of the samples were positive for *L. monocytogenes*.
- Two samples were positive for *E. coli*, 1 for *Salmonella* spp. and 36 for sulphite-reducing clostridia.
- Hemolytic *B. cereus* were also detected, but only 17 samples (raspberry and strawberry) out of 113 presented counts higher than 2 log.
- The most common isolated microorganisms were identified as *Staphylococcus epidermidis*, *Staphylococcus warneri*, *Staphylococcus capitis*, *Staphylococcus cohnii*, *Bacillus amyloliquefaciens* and *B. cereus sensu lato*.
- *Klebsiella pneumoniae*, *Salmonella enterica* and *E. coli* were also isolated from the tested samples.

### Acknowledgements

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