

Survival of *Clostridium sporogenes* in meat as a function of nitrite concentration

Adriana Forns Jiménez

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Introduction

Use of nitrifying salts with functions:

- Microbiological conservation (food safety): prevent growth of *Clostridium botulinum*
- Technological: organoleptic quality (color, taste and texture of the product)

↑ T^a, ↓ pH and oxidative environment = N-nitrosamine production

- Mutagenic and carcinogenic toxic activity

Social trend towards the consumption of fresh and minimally processed natural products

Objectives

To know the **survival of *Clostridium*** based on the concentration of **nitrites** in fresh meat.

Materials and methodology

Table 1. Culture media and conditions

Growth medium	Conditions (Temperature-time)	Microorganisms
TSA	37 °C, 24-48h	Mesophilic aerobic bacteria
TSN	42 °C, 24-48 h	<i>Clostridium sporogenes</i>
SPS	37 °C + 5% CO ₂ , 24-48 h	Anaerobic sulfite reducers
Sabouroud	30-35°C, 5-7 days	Filamentous fungi and yeasts
MacConkey	33-37 °C 18-48 h	Total enterobacteria Total coliforms <i>Escherichia coli</i>

Conclusions

Microbiology of raw meat was the usual for deboned and chopped.

SPS and TSN media are equivalent in order to count *Clostridium sporogenes* cells. So, antibiotic type does not affect the growth. Which to choose is up to laboratory resources.

Nitrite salts show clear effect on diminishing *Clostridium sporogenes* counts.

Materials and methodology

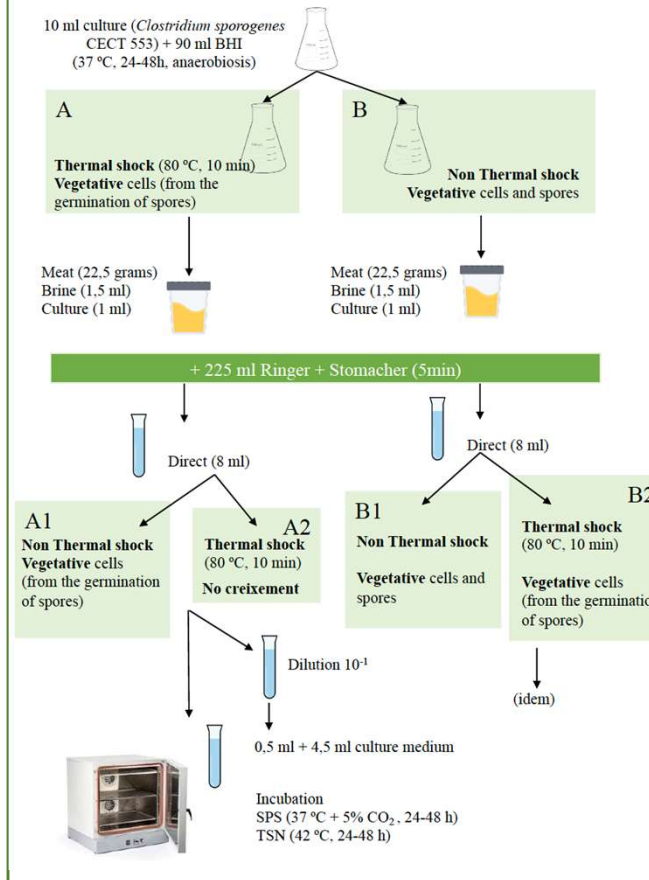


Figure 1. Flux diagram of laboratory process.

Results

Table 1. Raw meat counts

Microorganisms	Medium	Standard deviation
Mesophilic aerobic	5,33	0,09
<i>Clostridium perfringens</i>	ND	
Anaerobic sulfite reducers	ND	
Filamentous fungi ¹	1,20	1,55
Yeasts ²	1,05	1,34
Total enterobacteria	ND	
Total coliforms	ND	
<i>Escherichia coli</i>	Absence	

ND = non detected

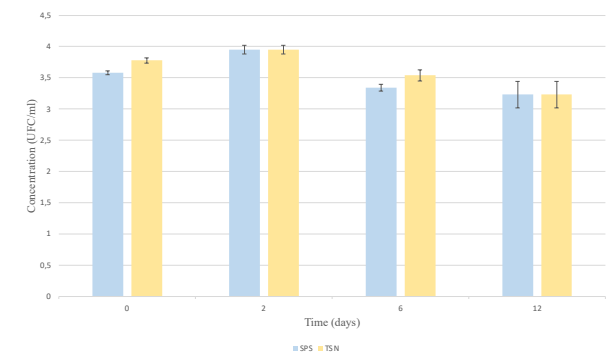


Figure 2. *C. sporogenes* counts from meat with 60 ppm of nitrite in TSN and SPS media

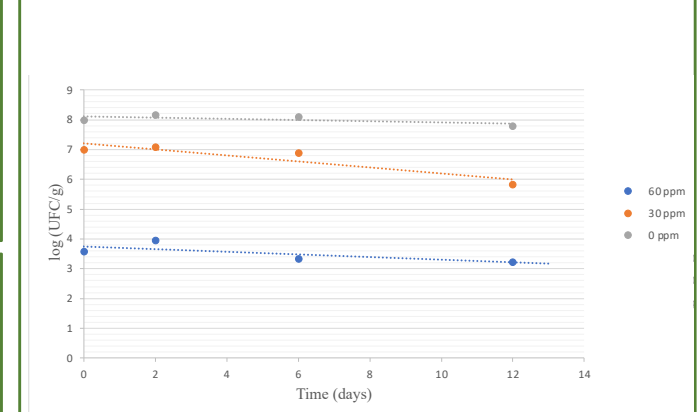


Figure 3. *C. sporogenes* counts from meat with 0, 30, 60 ppm of nitrite in TSN medium