FSA Project FS101025

Freezing as an intervention to reduce the numbers of campylobacters isolated from chicken livers

Background

- Caterers
- Colour
- Texture
- Undercooking

BBC Sign in News Sport Weather iPlayer TV Radi

NEWS HEALTH

Home World UK England N. Ireland Scotland Wales Business Politics Health Education Sci/Enviro

2 December 2011 Last updated at 01:09

Share

Chicken liver food poisoning link

Over 90% of cases of a common form of food poisoning seen in catering venues this year were due to people eating undercooked chicken liver pate, often at weddings, infection experts have said.

Chicken liver pate is a popular dish at weddings

The Health Protection Agency (HPA) analysed 18 outbreaks of Campylobacter in 2011 across England.

In all, 443 people became unwell and one had to be hospitalised.

The Food Standards Agency (FSA) has reminded caterers to cook poultry livers to prevent infection.

Related Stories

Two thirds of chicken

Assessment of freezing as an intervention

Two main project strands:

- Small retail survey of fresh and frozen livers
- Freeze some livers and see what happens

Retail survey

- 30 frozen and 33 fresh livers
- Differences in numbers of campylobacters
- Used ISO 10272-2 (with modification on low dilution)

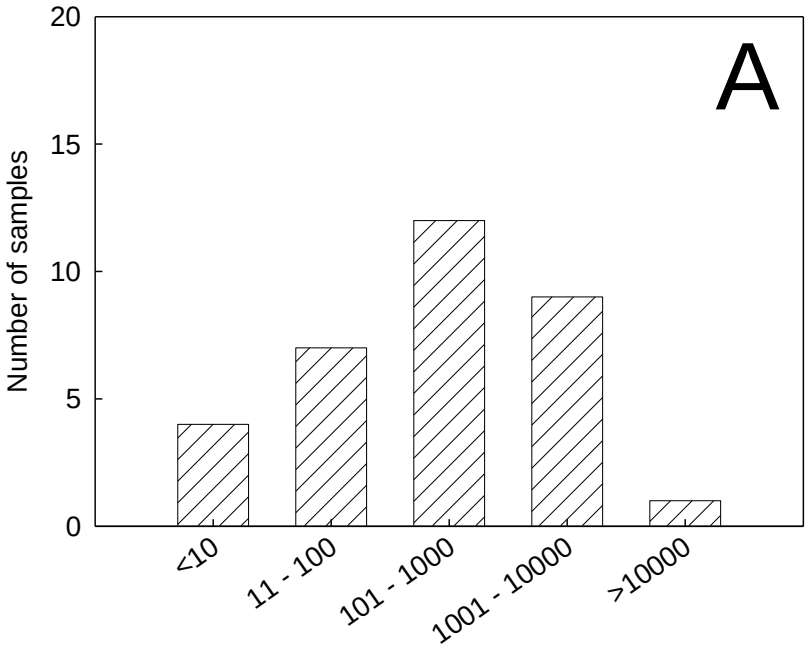
- 51 retail premises
- 14 different processing plants

- 48 supermarkets, 10 butchers, one deli, two commercial catering suppliers, two corner shops

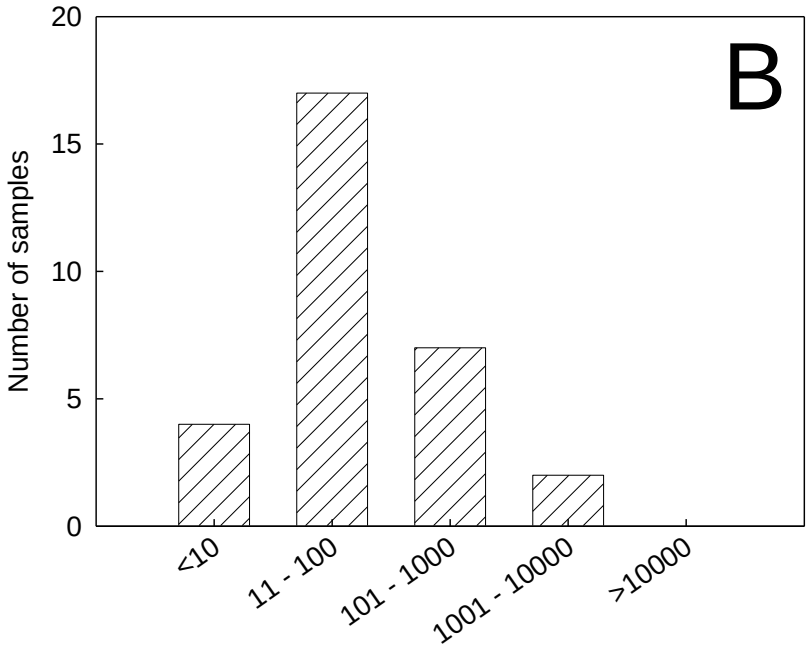
Locations

Sample collections piggy-backed onto FSA retail survey of Lm in CSM

Comparison results



Banded counts of *Campylobacter* numbers in unfrozen chicken liver samples purchased at retail (cfu/g)



Banded counts of *Campylobacter* numbers in frozen chicken liver samples purchased at retail (cfu/g)

Fresh mean log 2.25 cfu/g liver Frozen mean log 1.55 cfu/g liver

t-test: $P = 0.015$ Frozen livers in retail samples contained less *Campylobacter*

Retail survey

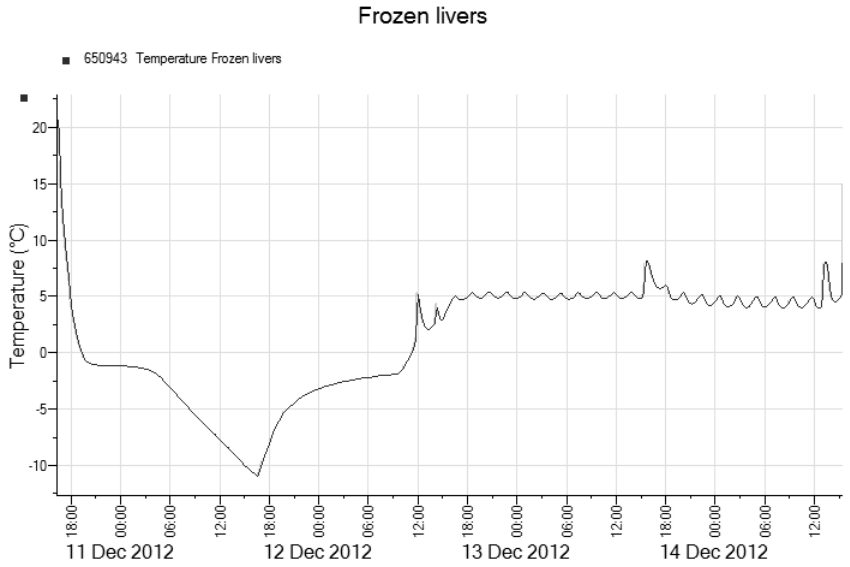
Nothing interesting:

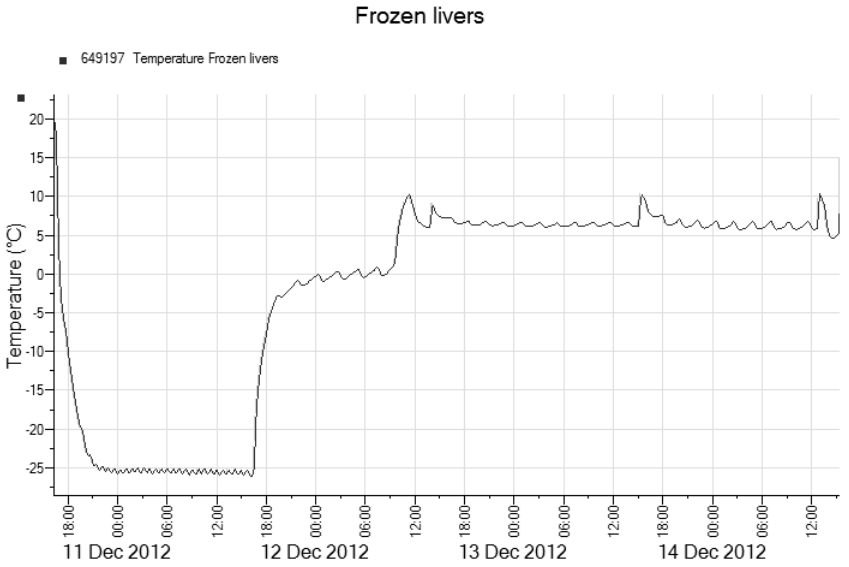
- No correlation between purchase temperature and numbers of campylobacters
- No correlation between remaining shelf life and numbers of campylobacters

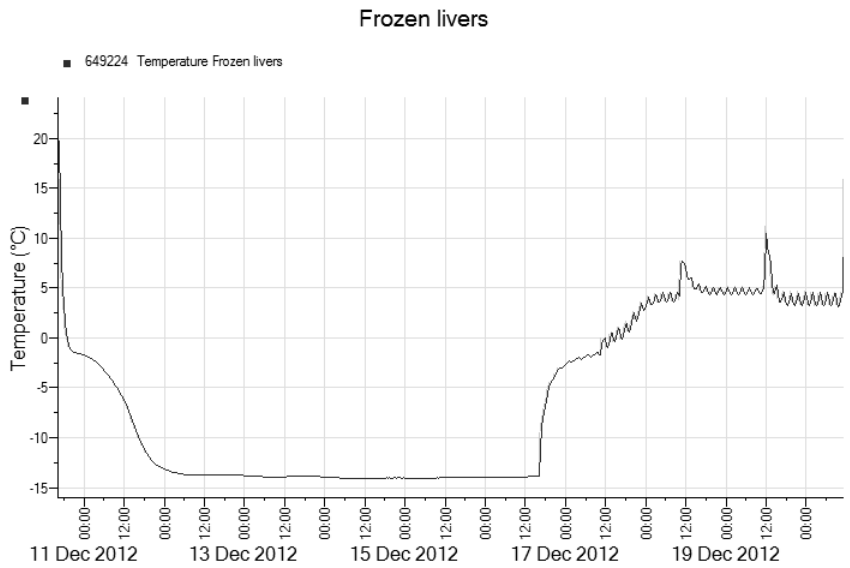
Strand two

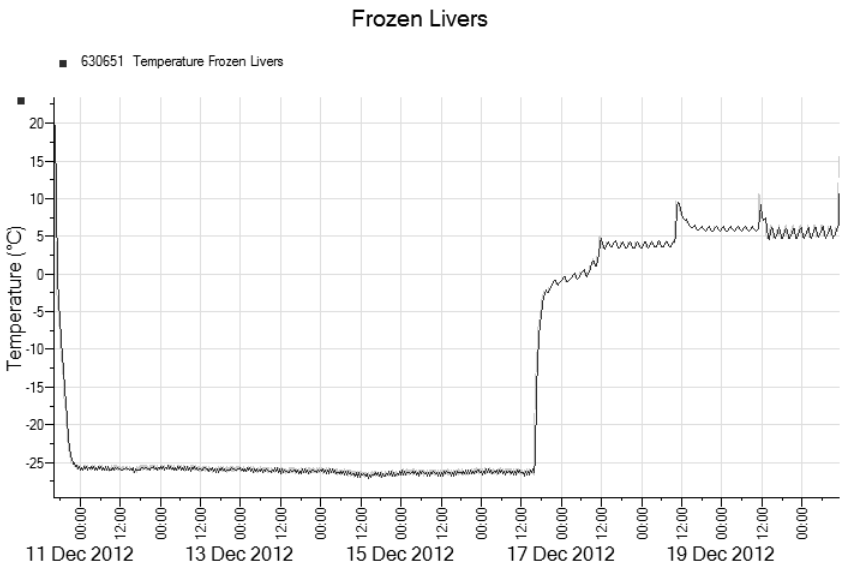
- Effect of freezing fresh livers on natural campylobacters
- Collected livers from slaughterhouses (to be sure) and final clearance flocks (max chance)
- After standard process – trimmed, chilled and cleaned in slush ice
- Broadly comparable numbers to the retail livers with longer shelf life (no sig. dif. whole retail sample set)

Freeze treatments -using two freezers

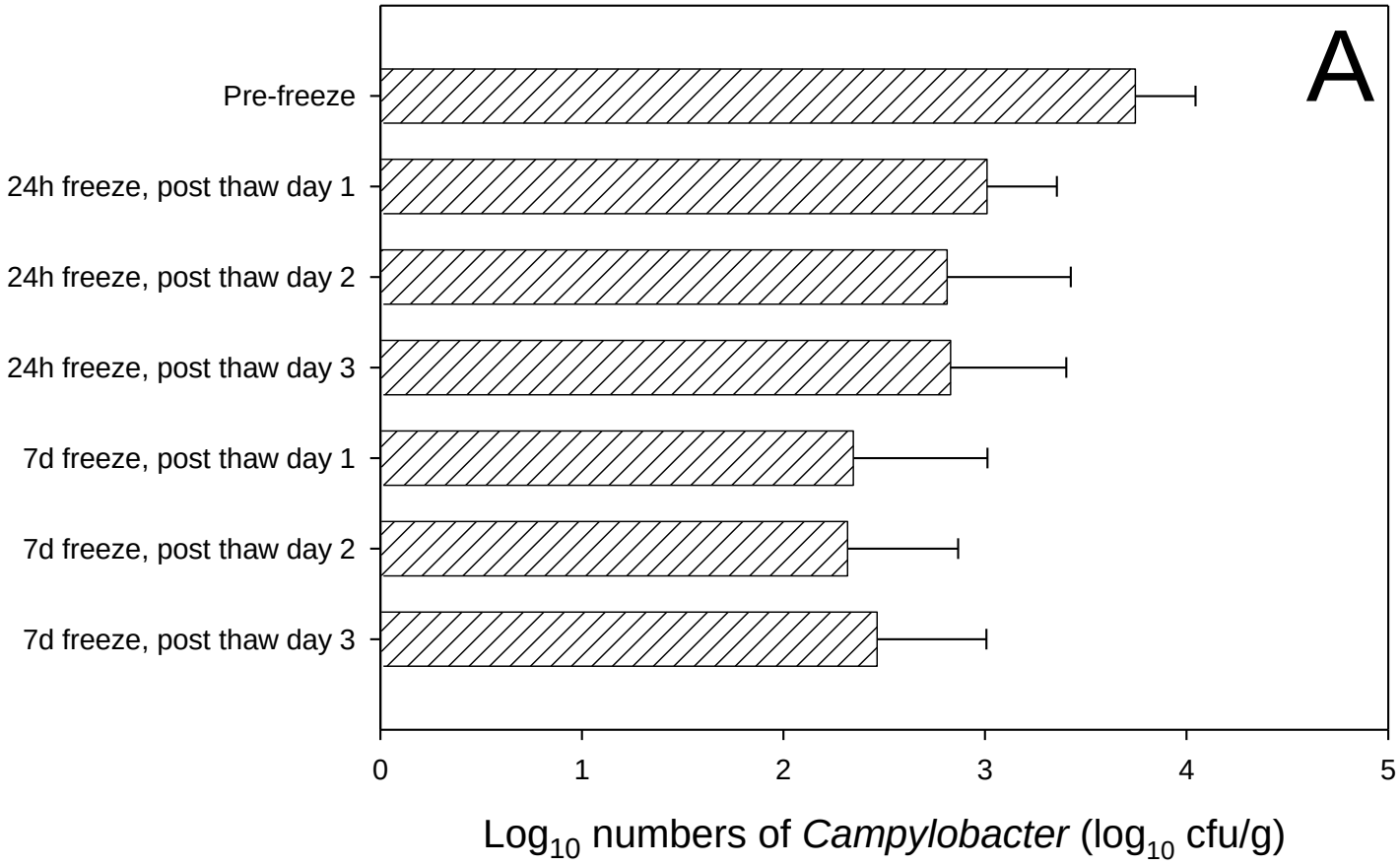








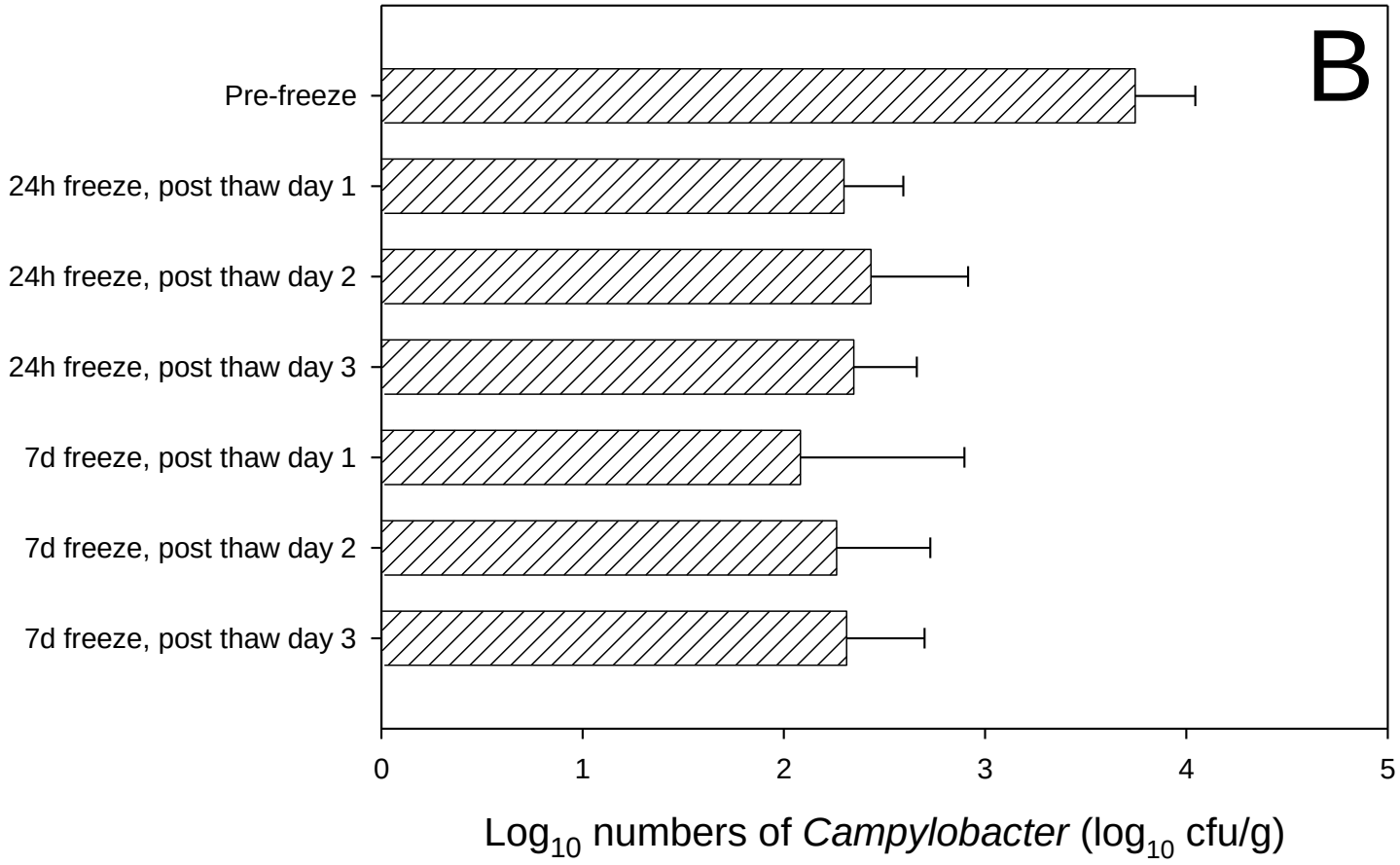
The -15ºC freezer (n=30)



The -15°C freezer

- Freeze for 24h significantly lower numbers of campylobacters compared with unfrozen livers (t-test $P<0.01$)
- Freeze for 1 wk significantly lower numbers of campylobacters compared with 24h frozen livers (t-test $P<0.01$)
- No evidence of recovery from sub-lethal injury (ANOVA)

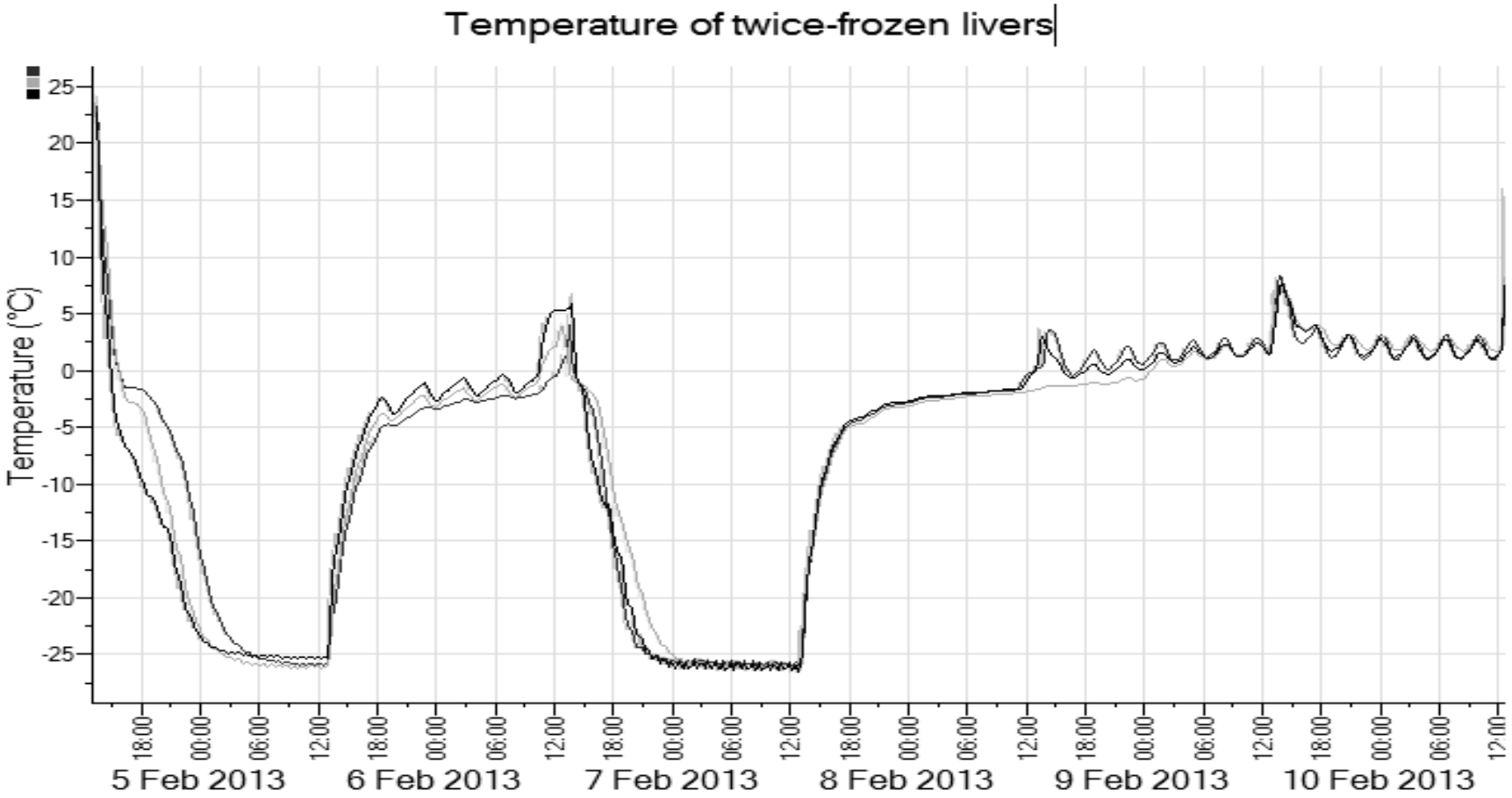
The -25ºC freezer (n=30)



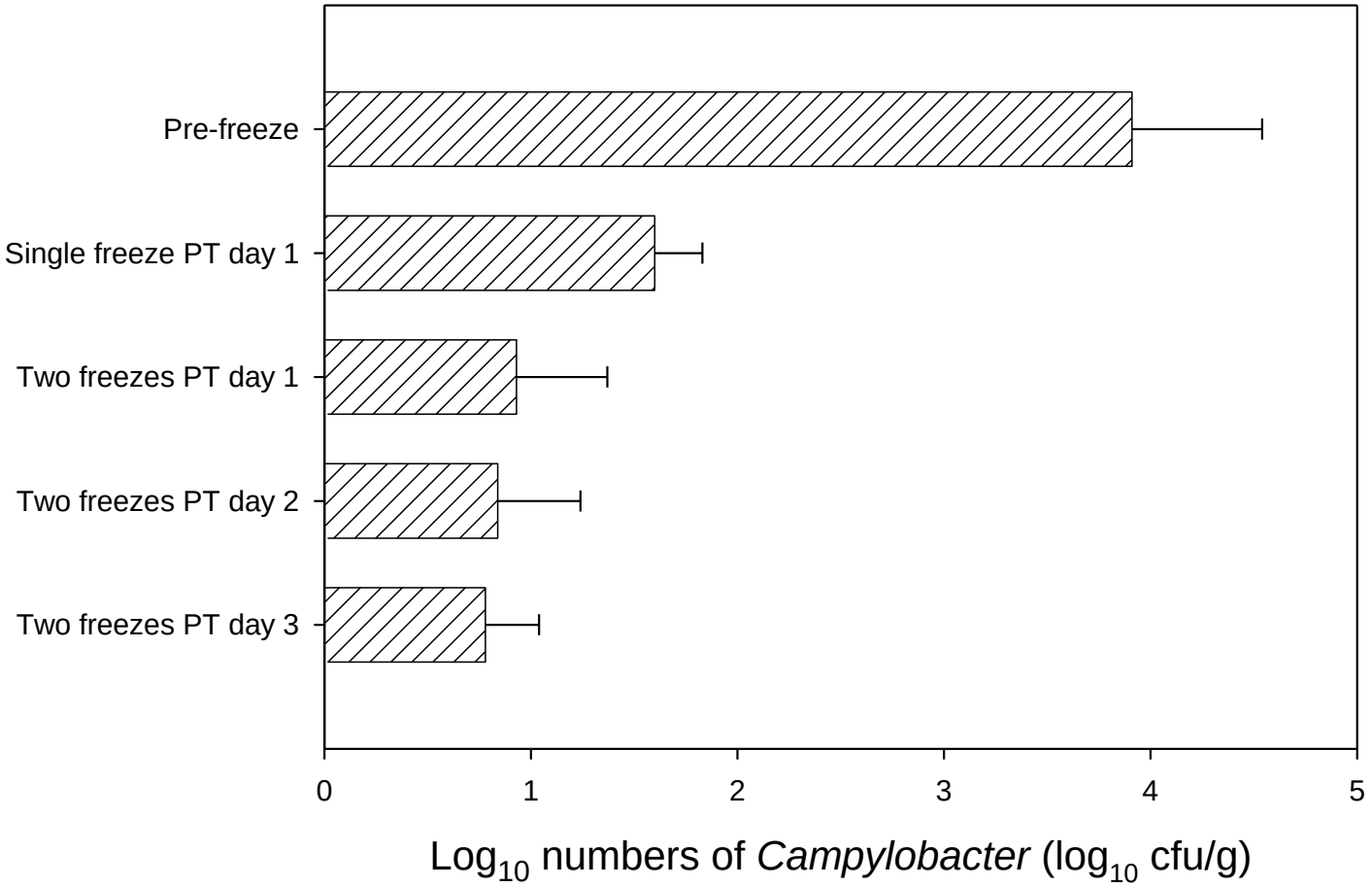
The -25°C freezer

- Freeze for 24h significantly lower numbers of campylobacters compared with unfrozen livers (t-test $P<0.01$)
- No difference when freeze for 24h compared with 1 wk frozen livers (t-test $P=0.18$)
- No evidence of recovery from sub-lethal injury (ANOVA)

The effect of two freezes to -25ºC



The effect of two freezes to -25ºC (n=30)



The effect of two freezes to -25ºC

- First freeze significant reduction compared with unfrozen livers (P= 2 x 10^{-26})
- Second freeze significant reduction compared with unfrozen livers (P= 9 x 10^{-10})
- Significant benefit of freezing twice
- 3 logs reduction to *Campylobacter* numbers

Project team

- Dawn Harrison
- Monika Tchòrzewska
- Victoria Morris
- Janet Corry