



**Commercial Applications of High Pressure
Processing**

Wednesday 23rd November 2016
Teagasc, Ashtown.

Liam Murphy- HPP Tolling

**HPP Tolling began in October
2012 with the goal been to
Opening the first commercial
HPP Tolling Station in Ireland.
This was achieved in
November 2014.**



HPP Tolling



Department of
**Agriculture,
Food and the Marine**

An Roinn
**Talmhaíochta,
Bia agus Mara**

HPP Tolling is currently registered under Article 6 of 852/2004 and has been allocated an EU registration number MH1-14 and has been entered in the Department's Register of businesses authorised to carry out High Pressure Processing of products of animal and non-animal origin. This number allows for HPP Tolling to trade within the EU.

HPP Tolling Ltd

Food Central, St Margaret's, Dublin, Co. Dublin, Ireland

BRC Site Code: 8274820

has been audited by SAI Global and found to meet the requirements of

Global Standard for Storage and Distribution (Issue 2: September 2010)

Scope: The storage of chilled goods to include contracted services (Chilling, High Pressure Processing - HPP).

Product Categories: 01 - Chilled and Frozen Food

Exclusions: None.

Auditor Number: 123004

Initial Audit Date: 02-December-2015

Issue Date: 22-December-2015

Date of Audit: 02-December-2015

Expiry Date: 13-January-2017

Re-audit Due Date: 02-December-2016





HPP Tolling

Irish Organic Farmers & Growers Association

Organic Certification at its best



What is a HPP Tolling Station?

- An independent processor.
- Available to all producers.
- No exclusivity arrangements.
- Centrally located.
- Each Station having the capacity to process up to 380Tonne/week.
- Centre of knowledge and learning in a partnership approach with many other organisations.



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Partners/Advisors.



UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland





The Pressure involved.

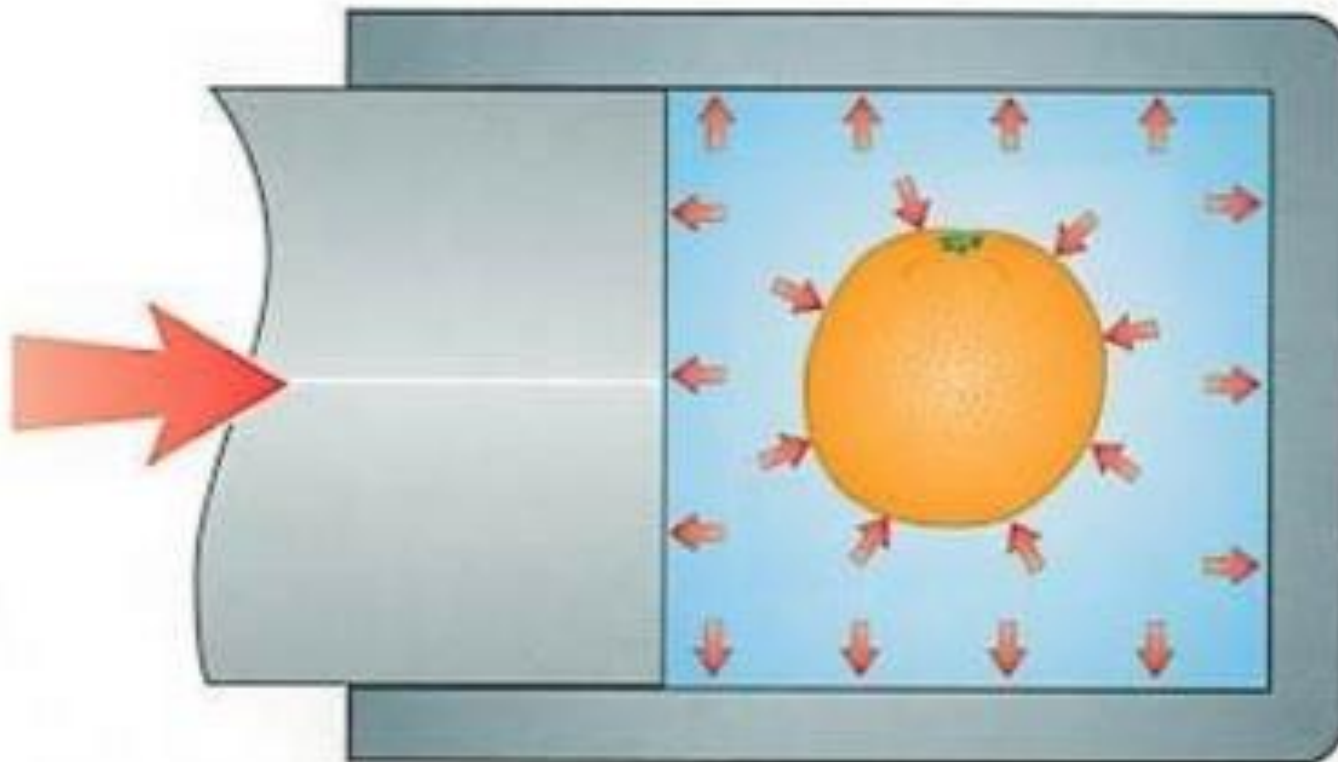
“HPP involves subjecting food to 300 to 600 MPa of pressure or 87,000psi”

- ***Car Tyre has 30psi.***
- ***The Mariana Trench is 6.85 miles deep and the pressure at the bottom is 15,750psi.***
- ***600MPa is equivalent to been 60Km deep in water, the distance from Dublin Airport to Newbridge Co. Kildare.***
- ***Water laser cuts steel at 50,000psi.***



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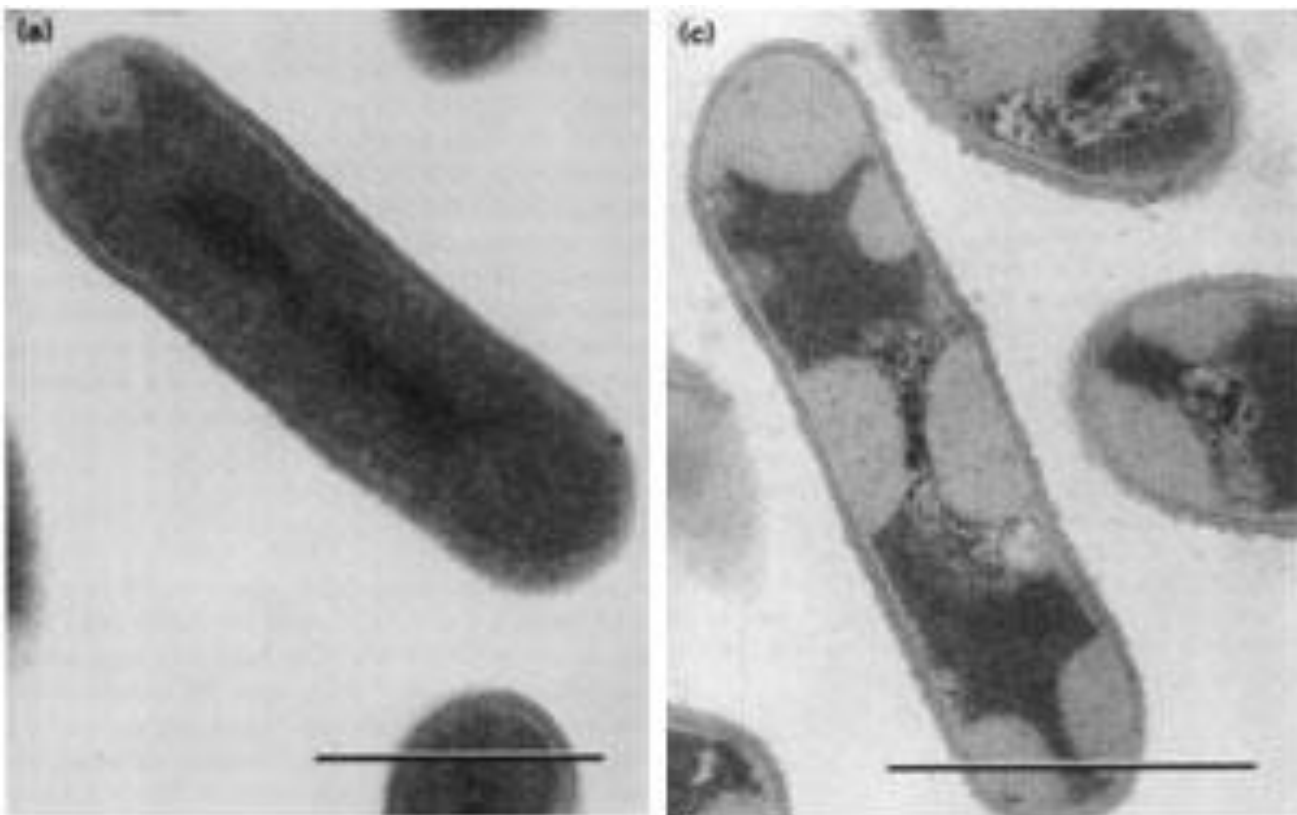
Pressure is applied uniformly by surrounding the packaged products in water which acts as the medium to transfer the pressure to the product, it's the moisture in the product itself that treats the product, unlike heat pasteurisation where heat variants can occur throughout the product HPP is a completely uniform treatment.





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LISTERIA.



***Listeria monocytogenes*. Before (left) and after (right) HPP**



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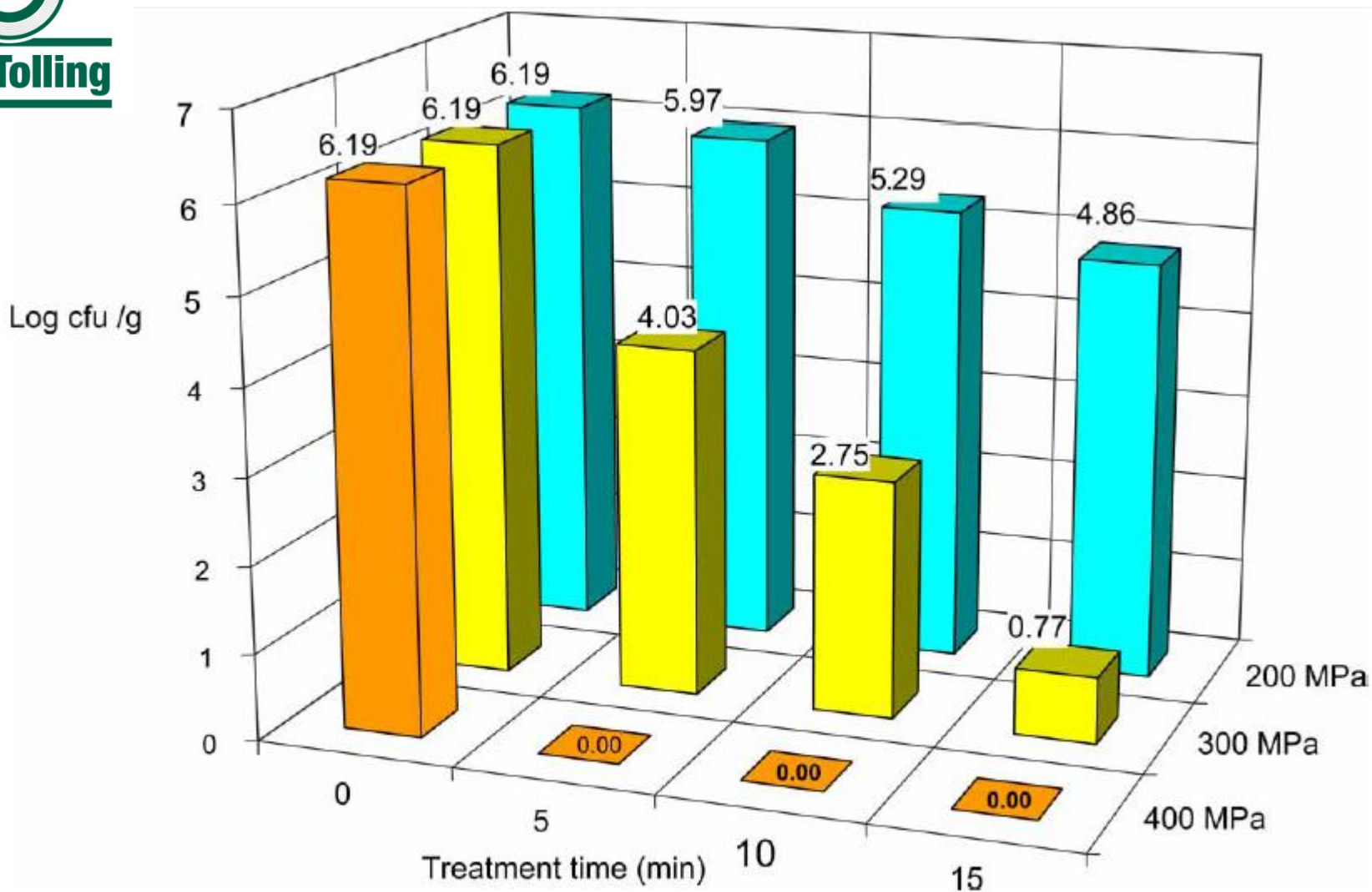
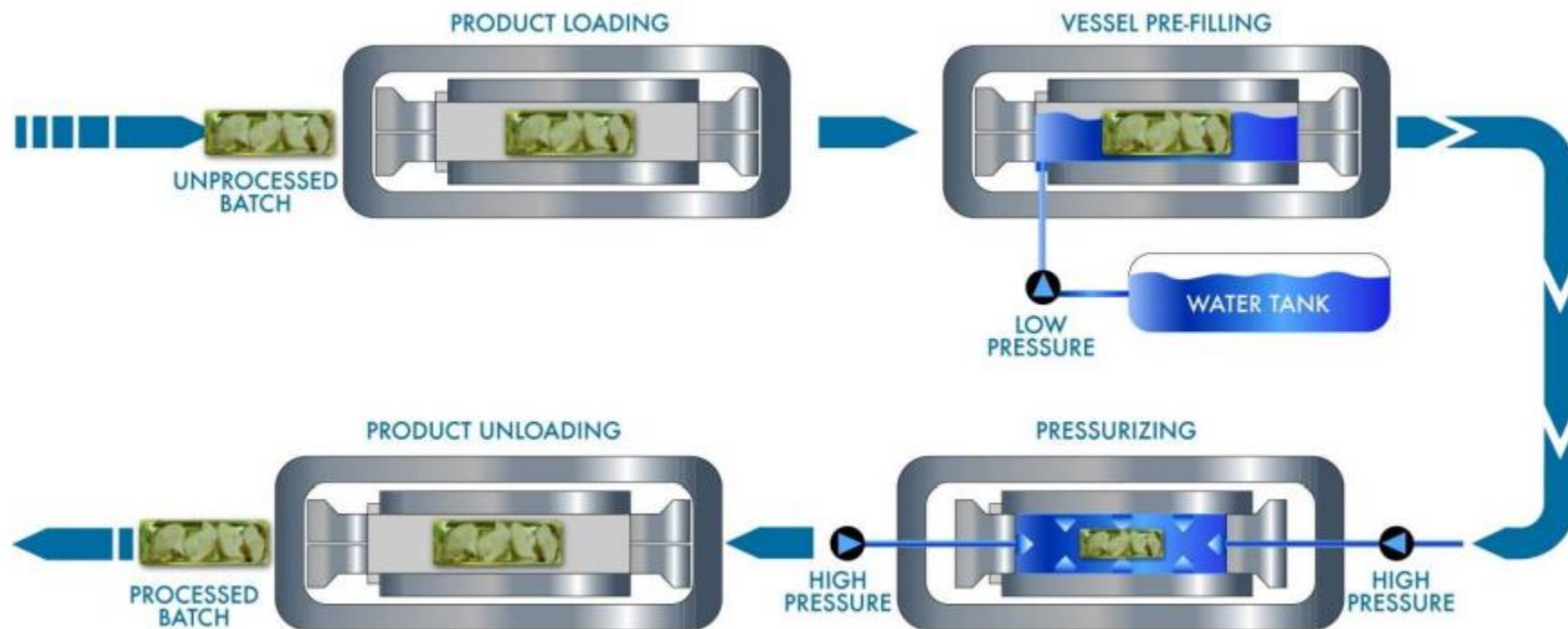


Figure 1. Effect of high-pressure treatment on survival of *C. jejuni* in cold-smoked salmon.

How the System works.



Hiperbaric 420



Guacamole



Advantages of HPP

- **Increased product shelf life** – even for food that is sensitive to heat.
- **Reduces product returns/food waste** due to date code expiry.
- **Low-temperature preservation method**: no loss in product quality compared to heat pasteurisation.
- **Eliminating the cost of expensive recalls.**
- **Brand protection.**
- **Eliminates harmful bacteria** such as salmonella, Listeria and e coli allowing the production of safer food.
- **Allows companies to expand into export markets.**
- **Enhanced food safety** due to inactivation of spoilage organisms and relevant food borne pathogens.
- **Processing in final consumer packaging** is possible (no recontamination)



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- **Additive-free preservation** of food by using only pressure.
- **Salt level** in food can be reduced substantially.
- **Cost reduction** in product formulations.
- **Increased production efficiency** due to larger more cost effective production runs.
- **Production of “natural/clean label”,** safe value-added food with a superior quality.
- **Homogenous effect of HPP:** Results are independent of product size and geometry.
- **Further benefits** like large yield increase compared to traditional processes (e.g. extraction of lobster meat from the shell, meat tenderising)
- **Waste-free and environmentally friendly,** sustainable technology – only water and electricity are needed.



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Suitable Products for HPP.



Meat products



Avocado Products



Ready To Eat Meals



Seafood products



Juices



Fruit products



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Dips and salsas



Wet salads and sandwich fillings



Dairy



Pharma-Cosmetic

HIRO BY ROISIN



Perfect Fit Meals Texas



Shelf-life went from 5 to 30 days with HPP



<http://www.packworld.com/package-type/thermoformed-packaging/map-vsphpp-and-linerless-labels-along-way>

Layered Selections: Simply Stir & Serve!



Black Eyed Pea Salad with Couscous & Corn
Grilled White Chicken Pasta Alfredo
Southern Style Three Bean Salad

Cheesy Mac & Cheese
Mediterranean Style Pasta Salad
Spaghetti with Mea

ctions Products.

Made by Cow will now make and sell '*cold-pressed* raw milk' as an alternative to the conventional heat pasteurised kind, after it was given approval by the NSW Food Authority





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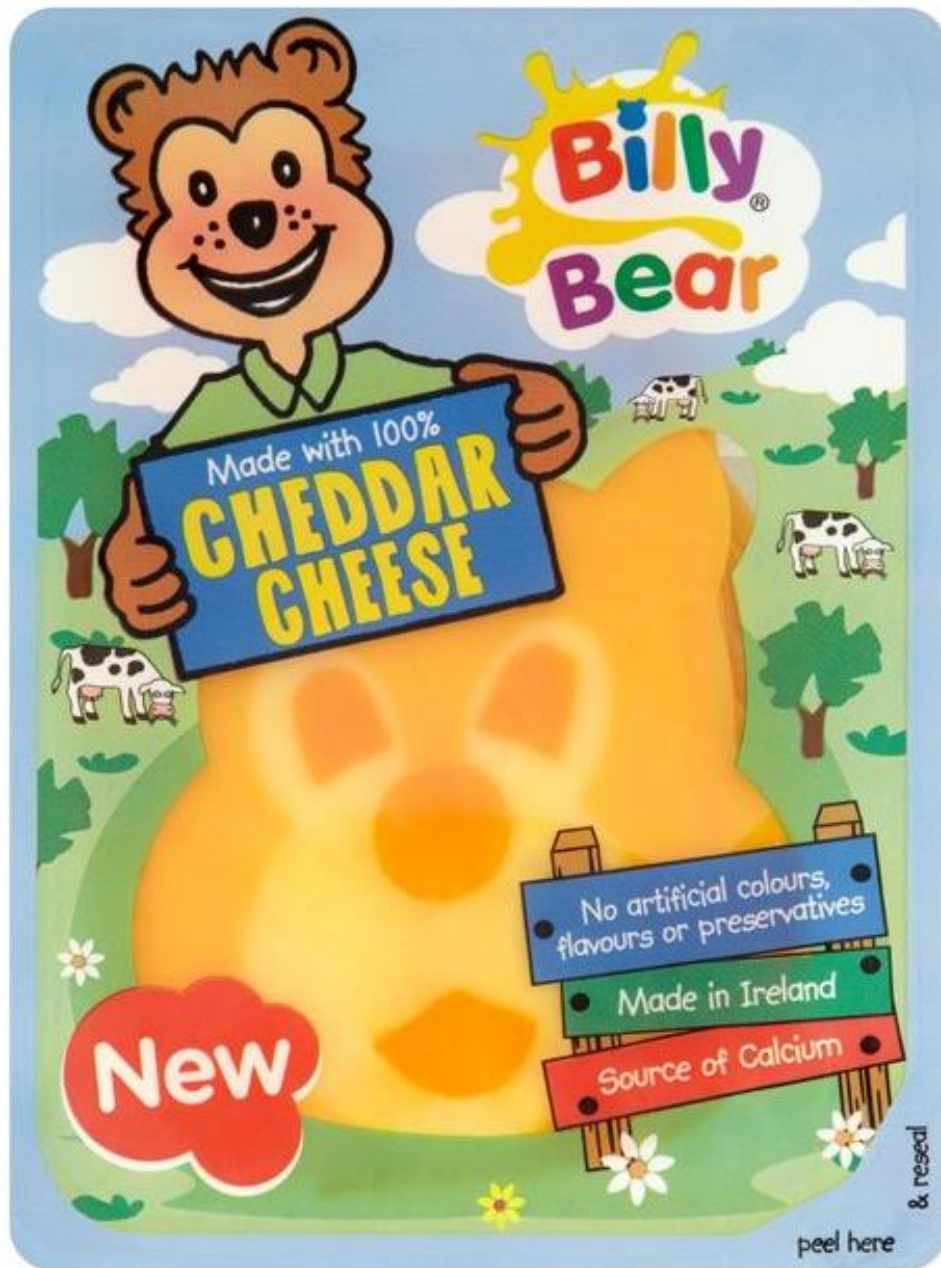
Fresh Cheese.

El Pastoret (Spain)





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KICK START YOUR DAY WITH A NOURISHING BREAKFAST IN A BOTTLE



- MADE WITH REAL FRUIT
- PACKED WITH OATS AND QUINOA
- SOURCE OF FIBRE AND PROTEIN
- ONE OF YOUR FIVE A DAY
- LOW FAT

Once upon a Farm



10 Recipes to Grow With



Our Promise: Healthy Ever After



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Cucina Fresca™ Pasta Sauce



Product's shelf life is 120 days from date of manufacture.

100% natural - NO additives and NO preservatives!

Enjoying the great flavours of traditional Italian pasta sauce is as simple as opening a bowl of Cucina Fresca Tomato & Basil, Garlic Robusto, or Garden Marinara Pasta Sauce.



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FRESH GUACAMOLE

*Ready To Eat
100% Fresh
Hass Avocados
& All Natural
Ingredients
No Additives
or Preservatives*

CLASSIC MILD GUACAMOLE

Mr. Avocado

MADE WITH 5 FRESH HASS AVOCADOS

Mr. Avocado

HOPE[®]

HUMMUS



SPICY AVOCADO HUMMUS

ORIGINAL RECIPE HUMMUS

THAI COCONUT CURRY HUMMUS



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Hormel's Natural Choice.



The first use of HPP for nationally available prepackaged lunchmeat, Hormel's Natural Choice line was introduced in 2005.



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While some retailers didn't know quite what to make of his 'chilled soup in a bottle' when he first started pitching the concept last year, around 75% *"just got it immediately"*, says Tio Gazpacho founder Austin Allan. *"And then they would say: How come no one has done this before?"*



While the price tag - \$8.99 for a 12oz bottle with a 60-day shelf-life (thanks to high pressure processing) - is high, it's consistent with what people are paying for a bottle of premium cold-pressed juice, says Allan, who is now exploring whether the shelf-life could be raised to 90 days or more.



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The Little Pharma.





HPP Trolling

HAPPY COCO.





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Cornucopia Juices





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Skinny Malinkys.





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4 SOME HEALTH





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Delpierre (France)

SEAFOOD EXCELLENCE GLOBAL AWARDS WINNERS

BARBET CINNABARE



MAQUEREAUX



Delpierre
SARDINES



Delpierre
DORADE
ROYALE



Seafood Product Line

Delpierre Filets preserved by high pressure
pasteurization, Delpierre



HPP Tolling

HPP FISH: DESALTED RTE COD



- Sanitisation and shelf life increase.
- More than 1 month shelf-life in HPP desalted, RTE cod
- Know how for prevention of texture changes



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Pelican Lake
BRAND OYSTERS



Gold Band Oysters
Preshucked, Easy
Open, Better
Flavour, Better Shelf
Life- Fresh



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In 2001, the US FDA evaluated some strategies for microbial inactivation and stated: “Ground beef can be pasteurized by HPP to eliminate E. coli O157:H7, Listeria spp., Salmonella spp., or Staphylococcus spp.”



HPP raw meat has intact the quality parameters throughout their shelf-life. According to M. Martin, 2011, HPP burgers maintain the quality parameters up to 42 days meanwhile control (no HPP) burger quality start to decrease on day 7.

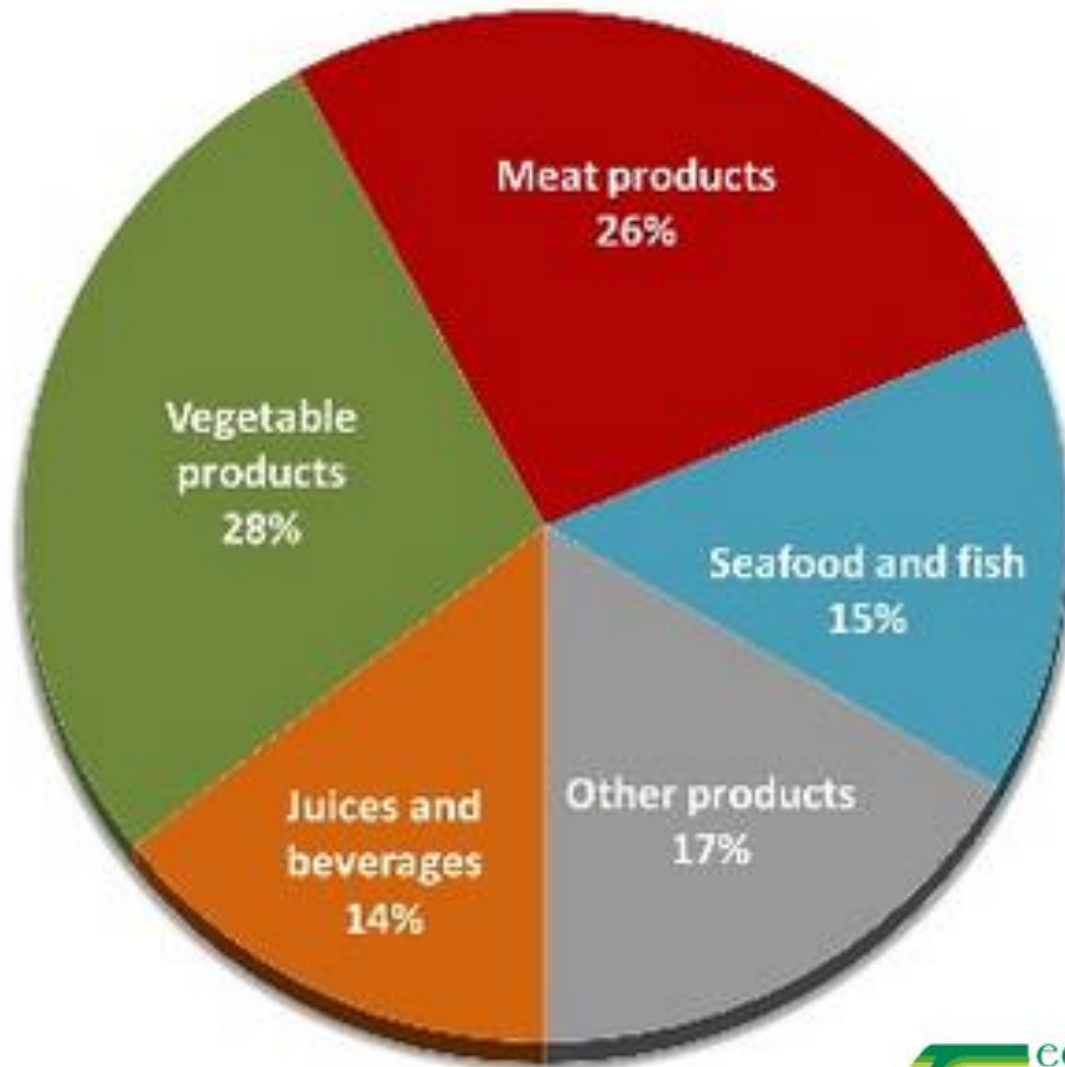
Rare HPP'd Burger.



Clean label HPP'ed raw marinated chicken breasts in oven ready packaging, no mess no waste and 100% safe with 4-6 weeks shelflife.

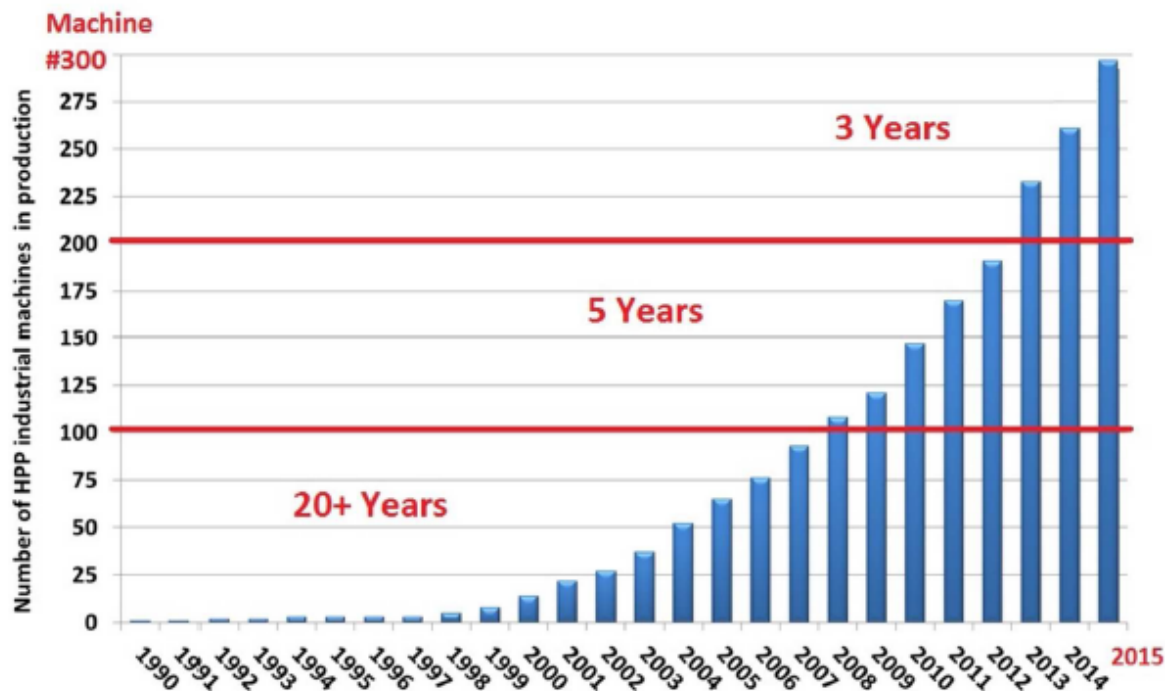


HPP Global Production 2014 + 700,000,00 Kg



Number of commercial machines in operation.

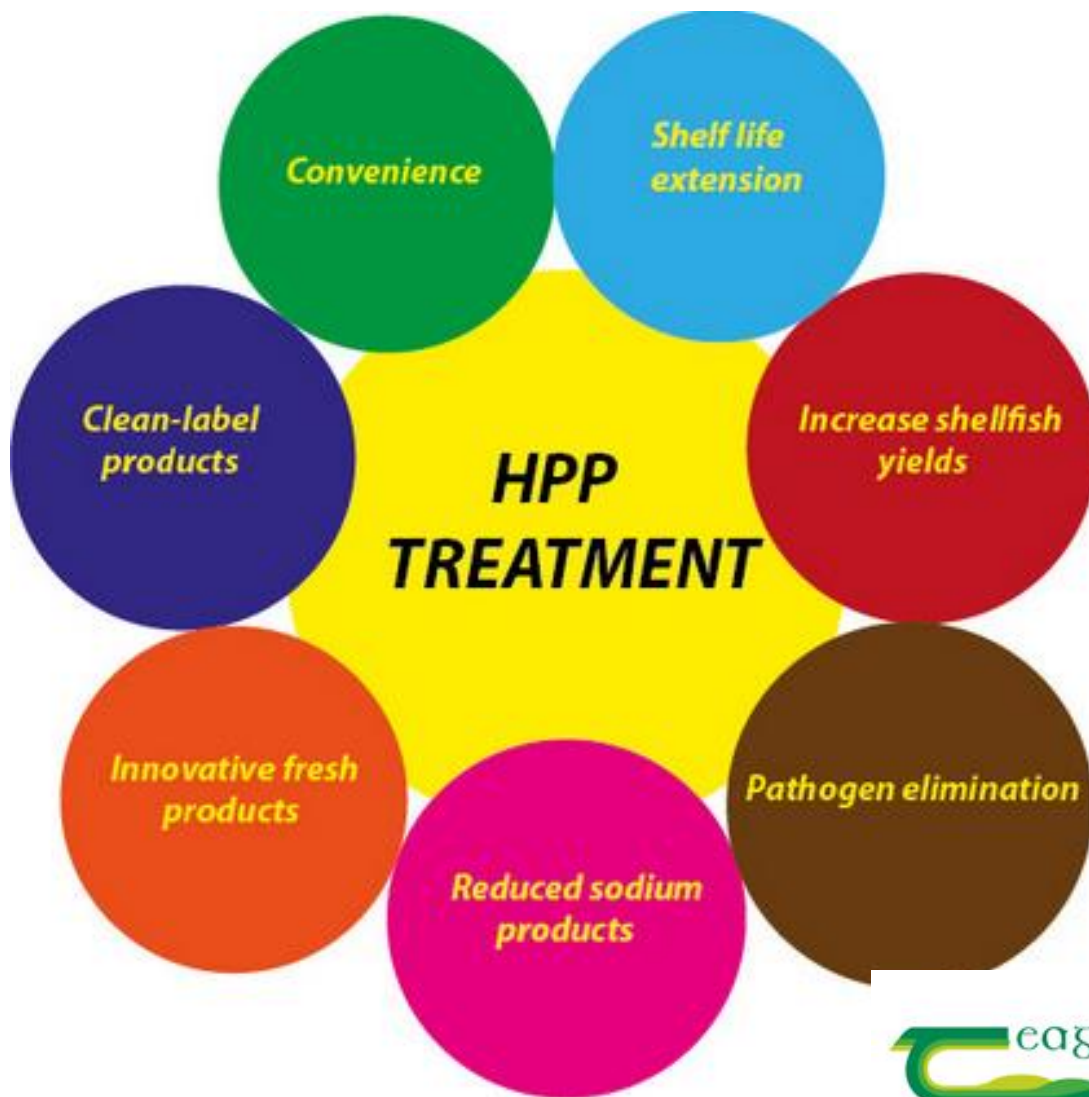
EVOLUTION OF THE TECHNOLOGY





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SUMMARY





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Q&A