

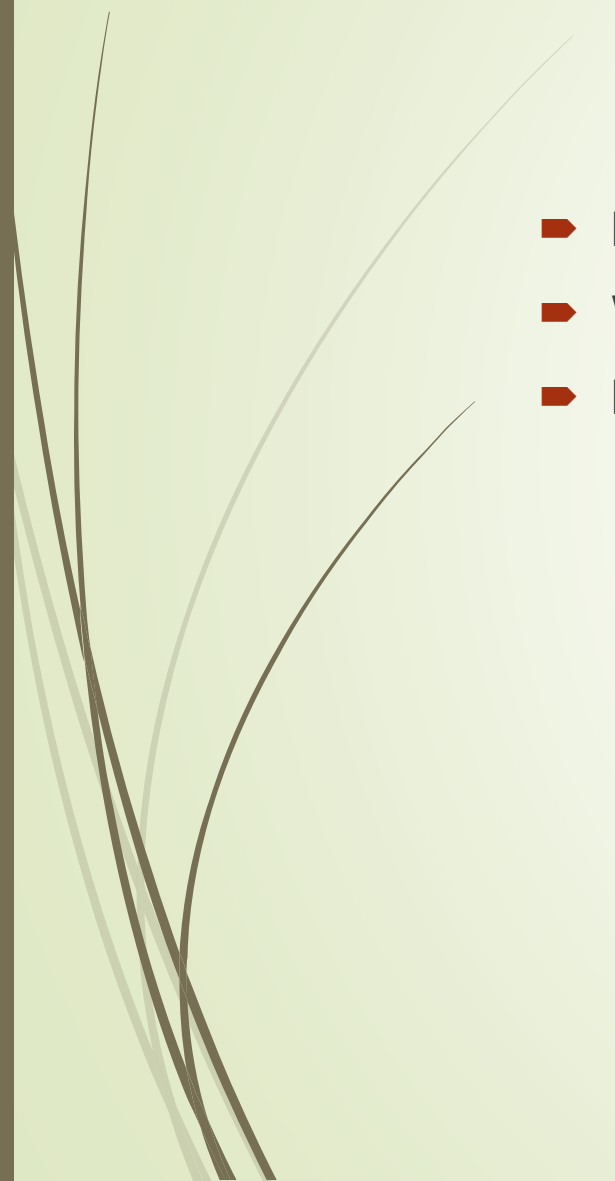
High Pressure Processing (HPP) in Australia

Ranjan Sharma

Updated 9 Oct 2017



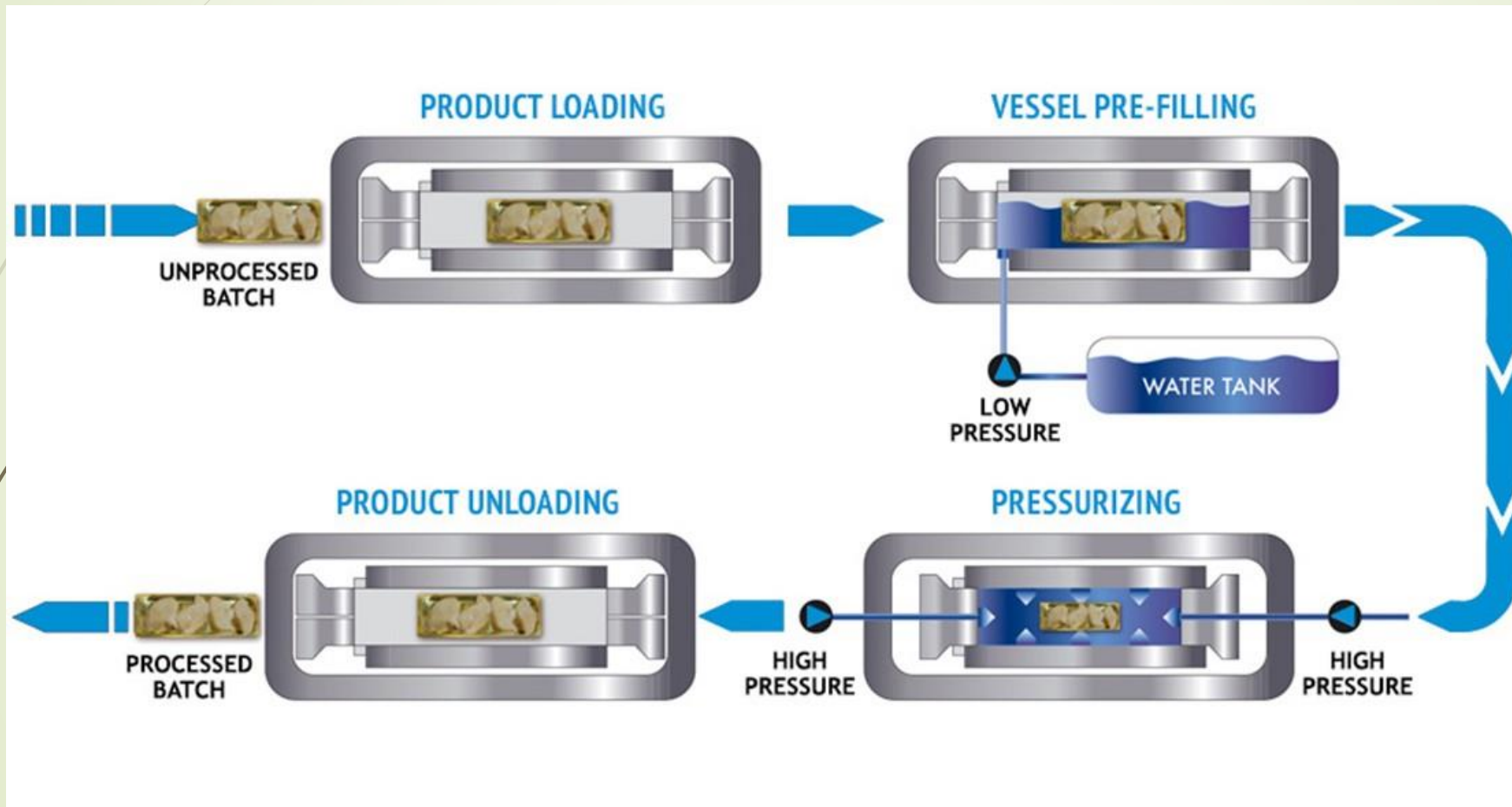
Acknowledgements

- Rod Smith – CSIRO, Werribee
 - Waldemar Hiller – Uhde/thyssenkrupp
 - Roberto Peregrina - Hiperbaric
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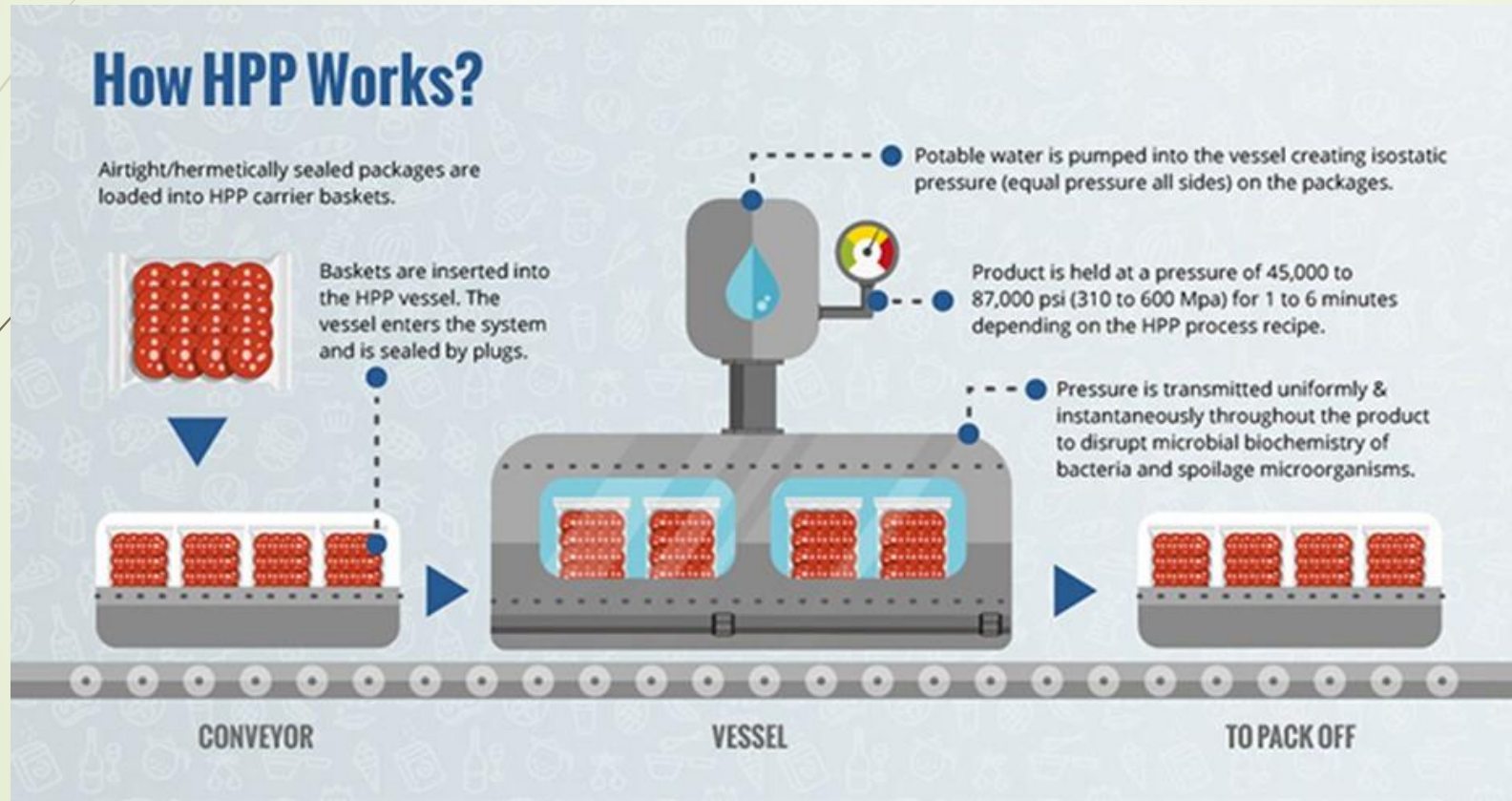
What is HHP or HPP

- Non-thermal processing technology
- Batch processing operation
- Alternative to heat pasteurisation
- Utilises very high water pressure (300-600 Mpa or 3000-6000 Bar) to inactivate pathogens and spoilage bacteria
- Processing is carried out post packaging
- Key benefits – enhanced shelf life without compromising colour, taste, flavour and texture of the product
- Suitable for moisture-containing foods
- HPP is recommended by USDA Food Safety & Inspection Service (FSIS) as a post-lethality treatment for ready to eat foods (RTEs) such as precooked meat and meals.

How HPP works?



How HPP Works?



Avure –US/Sweden



Hiperbaric, Spain

Uhde - Germany



HPP machines

HPP/HHP history in Australia

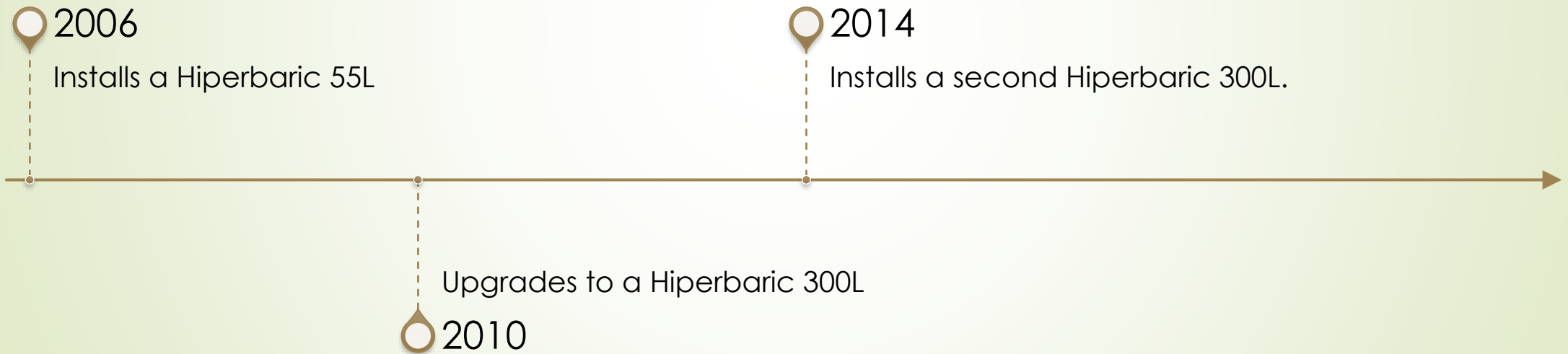
- Research and Development
- <2000 - CSIRO HPP research – First 2 L HPP machine at CSIRO North Ryde
- 2002 - CSIRO Werribee - 30L Avure vertical machine
- 2004 – CSIRO replaced 30L machine with Avure high temperature HHP machine



First commercial HPP machine in South Australia

- 2004 – 215L vertical Avure HPP machine for Oyster Shucking in South Australia - dismantled later due to financial issues; machine returned to Avure

Preshafood, Melbourne



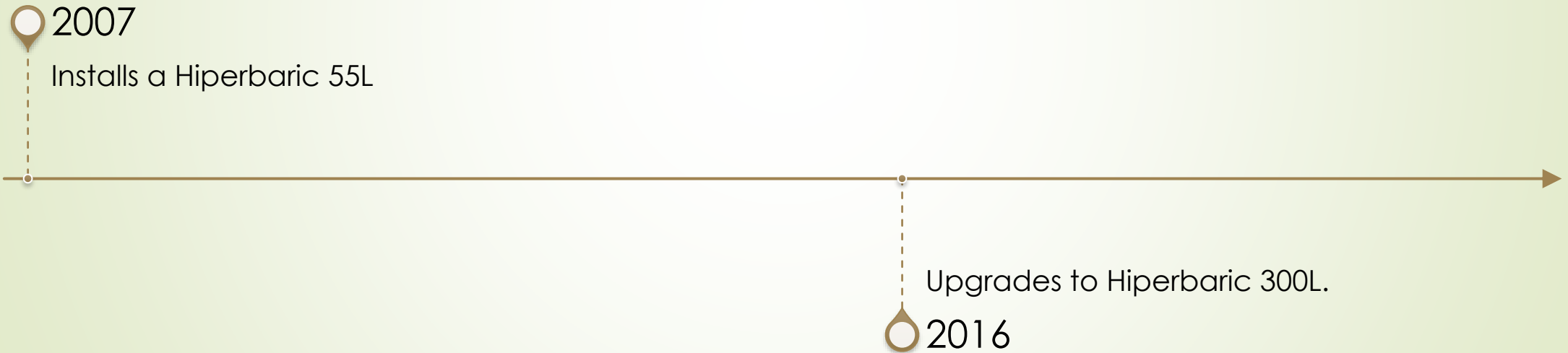
Austchilli, Bundaburg

2007

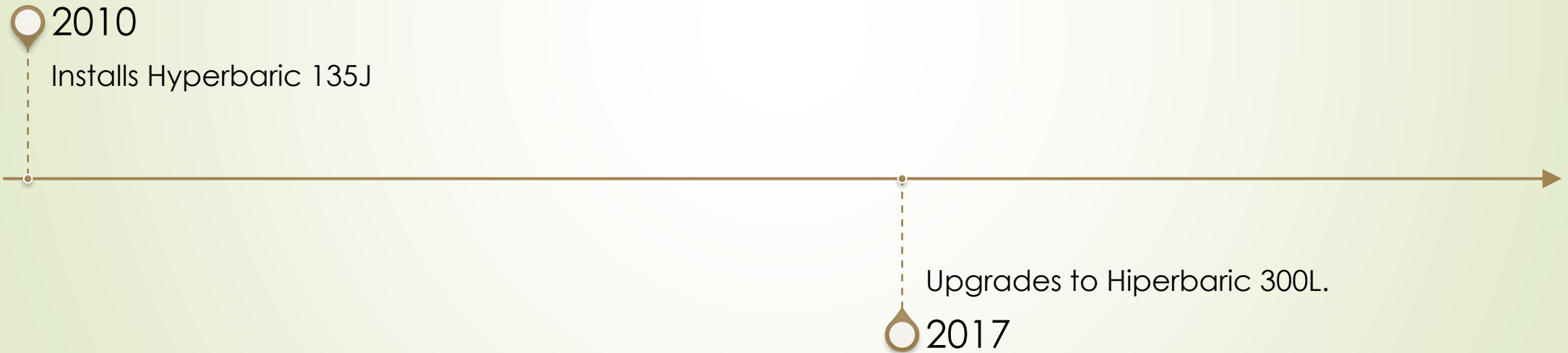
Installs a AV10 from Avure

<http://www.austchilli.com.au/high-pressure-processing-hpp>

Simpson Farms, Queensland



Moiramacs, Bendigo





Long Fresh, Sydney

2010?

Installs Uhde/Multivac 160L machine

<http://www.longfresh.com.au/>

Fresh Produce Alliance, Manjimup

2015

Installs a Hiperbaric 120L

<https://www.freshproducealliance.com.au/>



Made Group, Melbourne

2015

Installs 350L Uhde/thyssenkrupp

<http://madegroup.com/>



Insideout

2015

Installs a Hiperbaric 120L

<http://www.insideoutng.com.au/>



TenderChoice, Melbourne

2017

Installs a Hiperbaric 300L

<http://www.tcfoods.com.au/>

Preshafood - Preshafruit



- First commercially-successful HPP venture in Australia
- Original idea - Donald Gibb
- Process developed with CSIRO
- Started with fruit coulis
- Mater opted for single variety fruit juices
- Toll processing
- Functional drinks/smoothie



<http://www.preshafruit.com.au/>

AvoFresh – avocado products

- From AustChilli at Bundaberg, Queensland
- Retains colour and flavor and texture



<http://www.avofresh.com.au/>

Avocado products

- Simpsons Farm
- Food Service Products
- Chunky avocado
- Guacamole
- Avocado pulp

<http://www.simpsonfarms.com.au/>



Avocado products

- From Fresh Produce Alliance (WA)
 - 100% Pure Avocado
 - Avocado Chocolate Mousse
 - Avocado Mango Smoothie
 - Kiwi Banana Smoothie



<http://www.avovita.com.au/>

Ready to eat chicken products

- Moira mac's, Bendigo
- "Fresher for Longer" technology
- The process destroys food-borne pathogens such as Listeria, E. Coli and Salmonella, with little or no change in taste, look or nutritional value of the meat.

<https://www.moiramacs.com.au/>



Fruit and vegetable smoothie



- Impressed brand juice/smoothie from Made Group



<https://impressedjuices.com.au/>

Watermelon water with probiotic bacteria

- Contains probiotic bacteria **Ganeden BC30** strain which is a pressure resistant probiotic that remains active right through the shelf life
- Ganeden**BC³⁰** (*Bacillus coagulans*) is a spore-forming strain, it survives manufacturing processes and stomach acids to help deliver beneficial bacteria more effectively*
- Available from Harris Farm, NSW - A\$7.49 ea 1L bottle



<https://www.harrisfarm.com.au/>

*<http://www.ganedenbc30.com/amazing>

by Botanica

Shake Me, Chill Me.

Who says you can't be both lover and fighter? Not us. And to prove it, we carefully combined heart and muscle-loving watermelon with our signature gut-loving probiotic to create the most more-ish thirst fighter your tongue has ever seen. Drink it 'til your thirst is dead and buried.

100% Australian grown, pressed & bottled

100% Australian
grown, pressed & bottled

BC30 PROBIOTIC

Watermelon... 83%
Filtered water... 15%
Lemon Juice... 1%
Lemon rind oil... 1%
+BC30 Probiotic

Nutrition Facts	
4 Servings per package, Serving Size 250ml	
Amount per	Serving
Energy	204kJ 82kJ
Protein	<1.0g <1.0g
Total Fat	<1.0g <1.0g
Saturated	0.0g 0.0g
Total Carbohydrate	10.4g 4.3g
Sugars	10.4g 4.3g
Sodium	4mg 2mg

REFRIGERATE BELOW 5°
Enjoy within 3 days of opening.

Botanica Brands PTY LTD
8/16 Cape St Waterloo 2017 NSW Australia
info@botanicalife.com.au

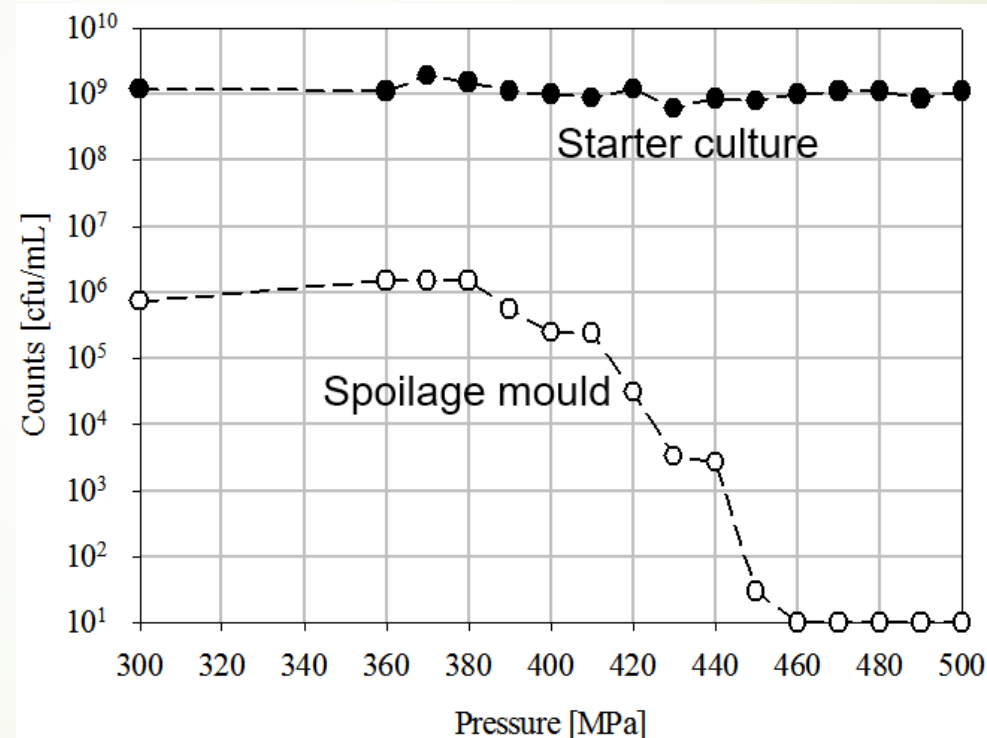
BPA FREE

COLD PRESSURE

9 348377 000087

Fonterra patent – Probiotic bacteria and HPP in fermented milk

- 2010 – Fonterra - US7854950B2
- Yogurt products
- Pressure – 350-650 MPa
- pH 3.0-4.6
- Lactic acid bacteria -
- Probiotic bacteria



Baby foods

- Born Pure brand from Fresh Produce Alliance (WA)
 - 4 month+ - Apple & Pear, Carrot & Pear, Sweet Potato & Apple
 - 6 Month+ - Apple, Pear, Avocado & Beetroot, Pumpkin, Apple & Broccoli, Pumpkin, Apple & Pear; Pumpkin, Mango & Brown Rice; Pumpkin, Mango and Avocado
 - 10 Month+ - Beetroot, Strawberry, Tomato & Chia Seed; Mango, Beetroot, Red Kidney Bean & Quinoa

<https://www.bornpure.com.au/>



HPP Coconut water

- Water sourced from Thailand
- Claims high levels of antioxidants
- <http://lifecoconut.com.au/>

Study Confirms *Clostridium botulinum* Safety of HPP Coconut Water*

*<http://www.avure-hpp-foods.com/news/study-confirms-safety-of-hpp-coconut-water/>



HPP Raw milk

- Approved by NSW Food Safety authority
- 3-Stage hurdle process:
 - Careful herd management
 - More hygienic milking practices
 - Cold HPP
- Available in most States of Australia - 750ml bottle for \$5

<http://www.madebycow.com.au/>



Nut milks

- Manufactured by InsideOut, NSW
- Almond milks
- Coconut Milks
- Macademia Milks
- Cashew milks



<http://www.insideoutng.com.au/>

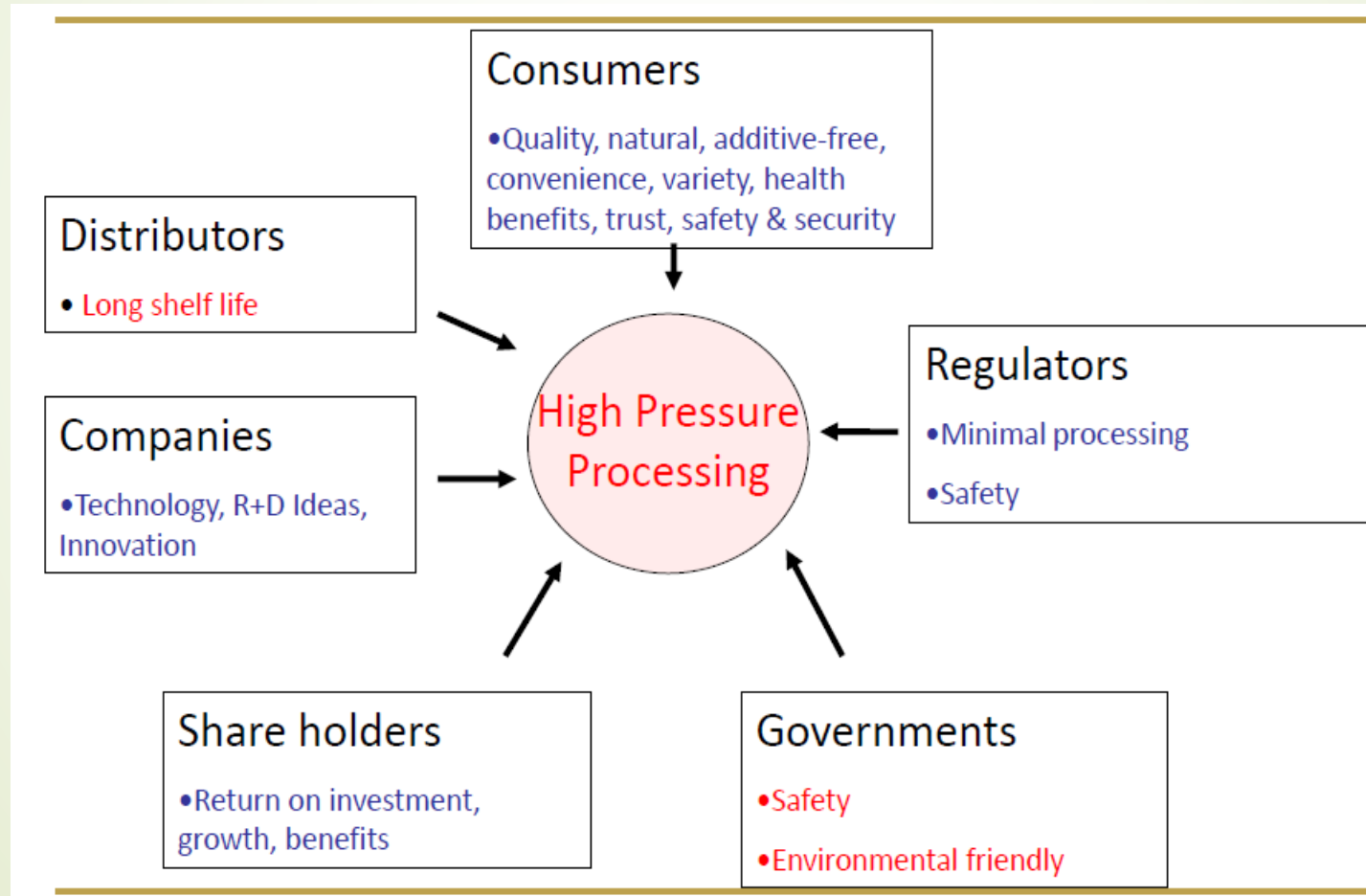
Ready to eat meat

- Tender Choice Foods, Australia
 - Roast skinless chicken meat: breast / leg
 - Steamed / poached skinless chicken meat: breast / leg
 - Flavours: tandoori / cajun / peri peri / teriyaki / yiros / mexican / custom
 - Bacon: streaky / short cut / diced

<http://www.tcfoods.com.au/>



Future for HPP – very bright indeed!





Thank you!

About OzScientific Pty Ltd

- Research & Development organisation
 - New Product Development and food processing – concept to commercialisation
 - Enterprise-based technical training
 - Analytical services and shelf life analysis
-
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