An introduction to emerging processing technologies

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Overview of content

• Why manufacturers innovate

• Overview of emerging preservation technologies
Why innovate

• Changing world
  • Climate
  • water availability
  • soil quality
  • population growth
  • energy prices

• More efficient
Manufacturers challenge

• Make more
  – with less
  – at reduced costs
  – with improve quality
  – with extended shelf-life

• Technology will be our saviour (let’s be optimistic!)

Examples of emerging preservation technologies

Cold plasma

UV-C

Pulsed light

Low $A_w$ pasteurisation

Power Ultrasound

HPP
Examples of emerging preservation technologies

Image courtesy of coolwave processing

www.bbc.co.uk/news/uk-scotland-scotland-business-21390274
www.ferlo.com
www.advancedmicrowavetechnologies.com
Pulsed light processing
Pulsed light shelf-life extension

• 5-7 days visibly mould free shelf life extension

Control

Treated
Plasma Shelf-life extension

• Day 14

Control

2 min treatment
Anacail – shelf-life extension

• Plasma is generated on the inside of the packaging material.

• Anacail ozone generator, changing a precise amount of the oxygen in the pack into ozone.

http://www.bbc.co.uk/news/uk-scotland-scotland-business-21390274
High pressure processing (HPP)
HPP products

- Meat products 26%
- Vegetable products 29%
- Seafood and fish 13%
- Juices and beverages 14%
- Other products 18%

Examples:
- Guacamole
- RTE vegetable meals
- ‘Listeria-free’ dry-cured products
- Raw beef products
- Preservative-free sausages
- Oysters
- Shucking
- Lobster meat extraction
- Clams & mussels
- Shucking
- RTE seafood meals

Global HPP food production in 2012: + 350 000 000 Kg
HPP quality improvement

Raw

600 Mpa 2 min

90°C 10 mins equivalent
PEF - Hoogesteger

- Upgraded to an 80 kW. System allowing a processing capacity of 8000 litres per hour.

- Use PEF to solve their short shelf life product while maintaining their fresh taste.

- Their products now have a minimum 18 day shelf life allowing market expansion.
PEF – retaining natural colours

Yellow

Blue

Days

Untreated
PEF
Thermal
Continuous microwave heating

Video courtesy of Advanced Microwave Technologies
Pasteurisation of dried ingredients
Ultrasound
Conclusions

- Important for manufacturers to innovate to face major global challenges and remain competitive

- Manufacturers need to understand their limitations (throughput, capital investment, etc)

- Many emerging techs are available but have niche applications

- Talk to a specialist...
Thank you

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