

Institute of Natural Materials Technology  
Chair of Food Engineering

# Berrypom: Processing and application of berry pomace

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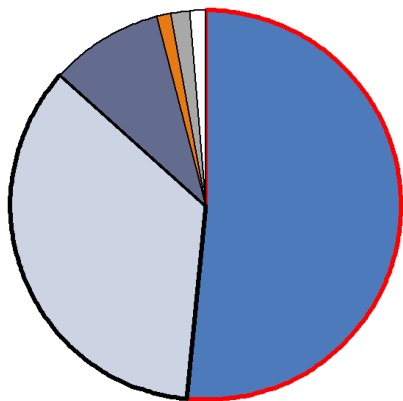
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21<sup>th</sup> EFFoST Conference  
Sitges 14<sup>th</sup> November 2017

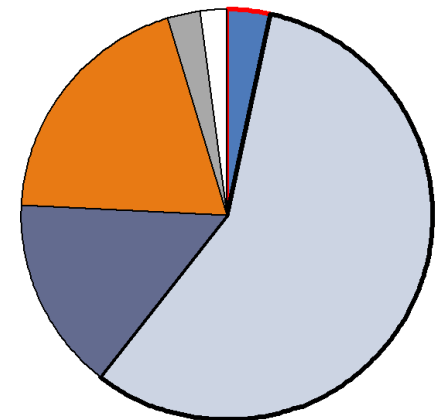
# Background

**Berry juice production: 20 - 30% press residues  
→ undervalued by-product**

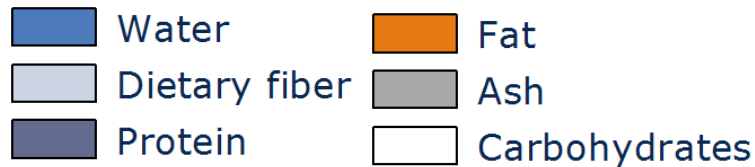
## Nutritional value



Fresh pomace



Processed powder



- High fibre content
- Source of phytochemicals
- Fats become available

# Project outline

## Partners

**Germany**



**UK**



**Spain**



**Sweden**



**New Zealand**



# Project outline

## Literature work

## 3 Reviews

- (2015) Adding Value to Fruit Processing Waste: Innovative Ways to Incorporate Fibers from Berry Pomace in Baked and Extruded Cereal-based Foods – A SUSFOOD Project. *Foods* 4, 690-697.
- (2016) Berry pomace – a review of processing and chemical analysis of its polyphenols. *International Journal of Food Science & Technology* 51, 1305-1318.
- (2016) Fiber from fruit pomace: A review of applications in cereal-based products. *Food Reviews International*, doi:10.1080/87559129.2016.1261299

## Partners



# Project outline

Literature work

Processing &  
extraction

- Chemical characterisation
- Technofunctional properties
- Fiber composition

## Partners



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# Project outline

Literature work

Processing &  
extraction

Application in  
cereal-based products

- Dough systems
- Extruded snack food
- Pastry products
- Brittle bakery products

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# Project outline

Literature work

Processing & extraction

Application in cereal-based products

In-depth characterisation

- Microstructure
- In-vitro digestibility
- Sensory properties
- Phytochemical stability during processing

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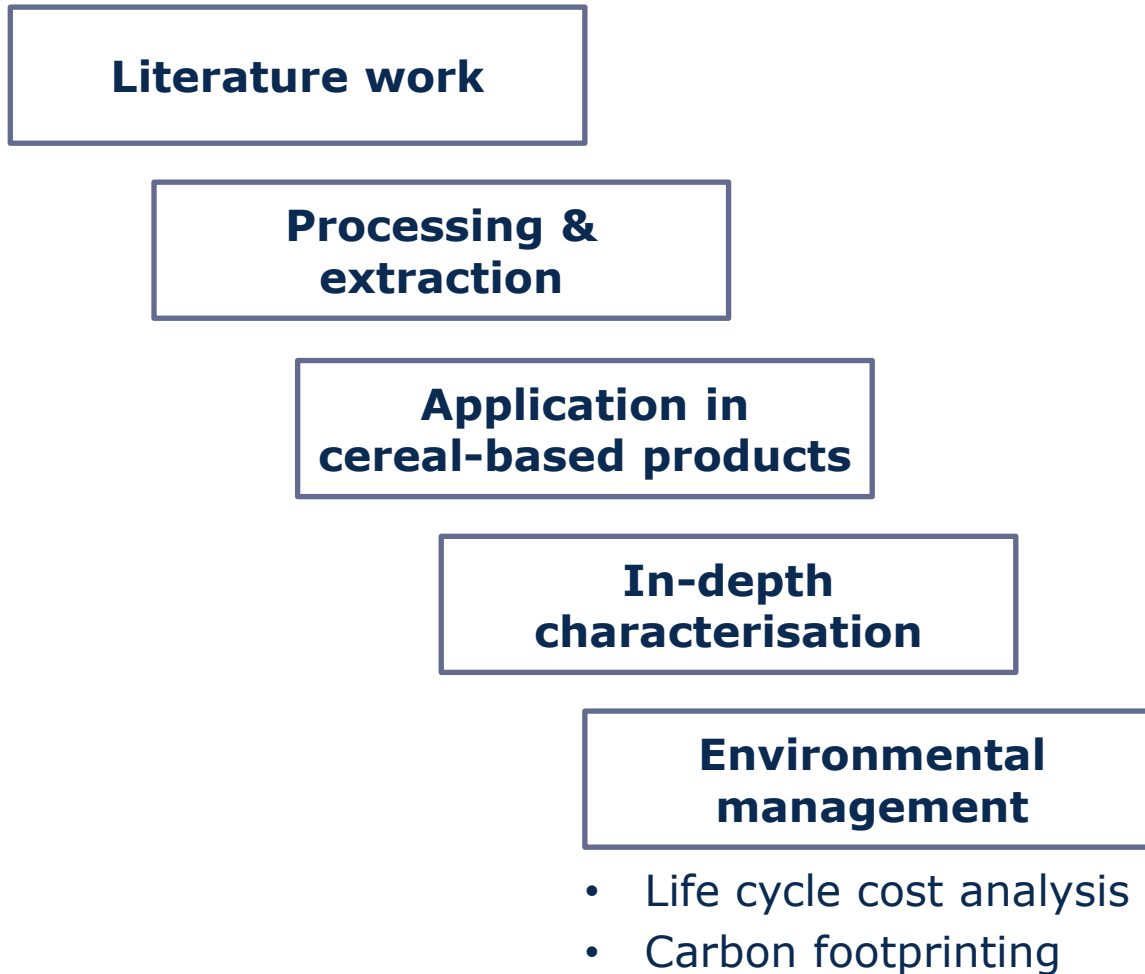


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# Project outline



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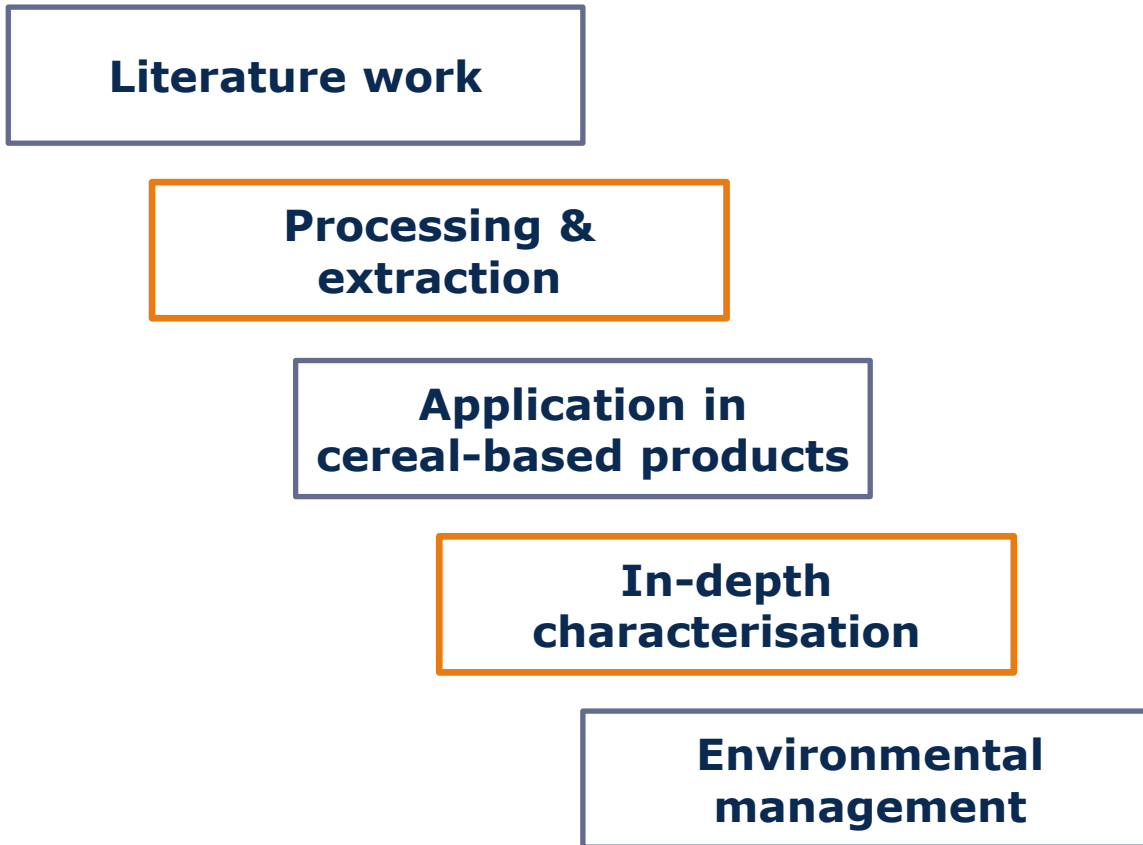


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# Project outline



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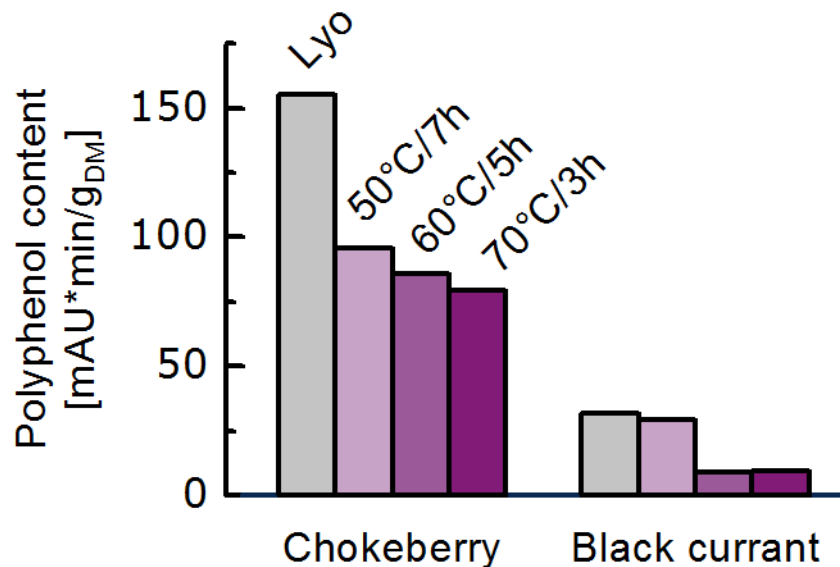
# Processing



# Processing



## Impact of temperature/time regime on polyphenol content

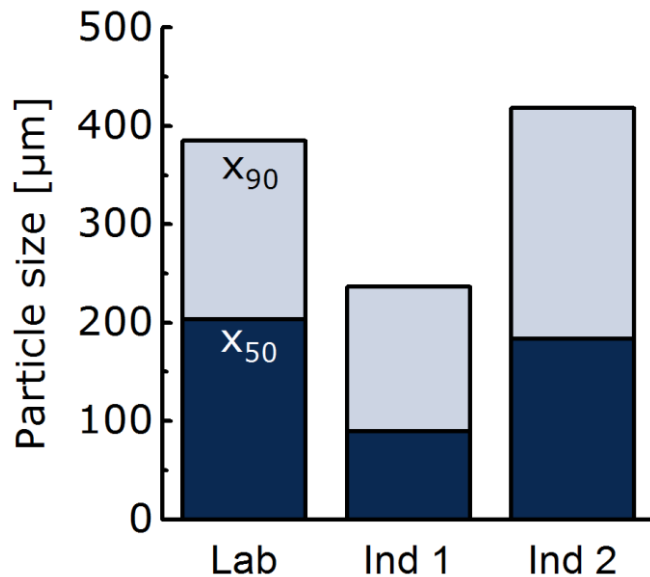


- High amount of polyphenolic compounds
- Distinct degradation among varieties



## Lab vs. industrial scale

Problem seeds → bimodal distribution



	hot air drying + impact mill	simultan. drying + grinding
Particle size	↓	↑
Fractionation	✓	(✓)
Throughput	↓	↑

# In-depth characterisation

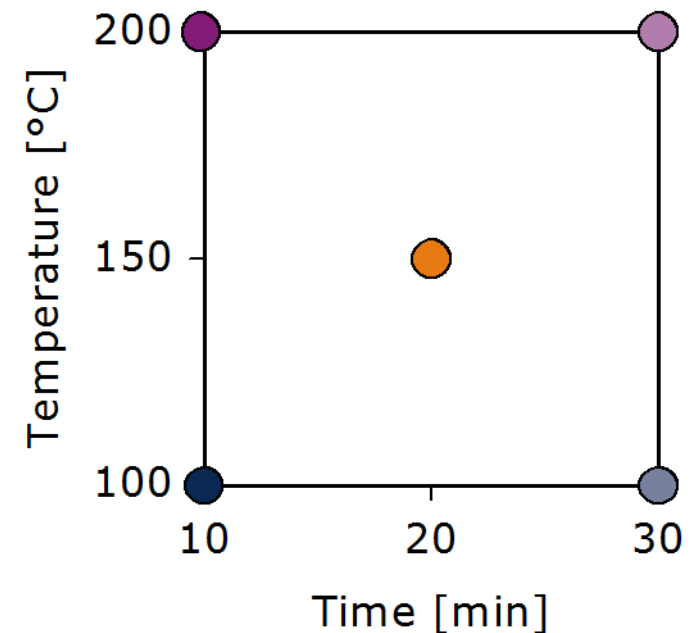
Flour replacement up to 30% → high in dietary fiber

**Bioactive compounds?**



**Simulation of heat treatment  
in applications**

Powder & Matrix:  
dry – in water – in oil

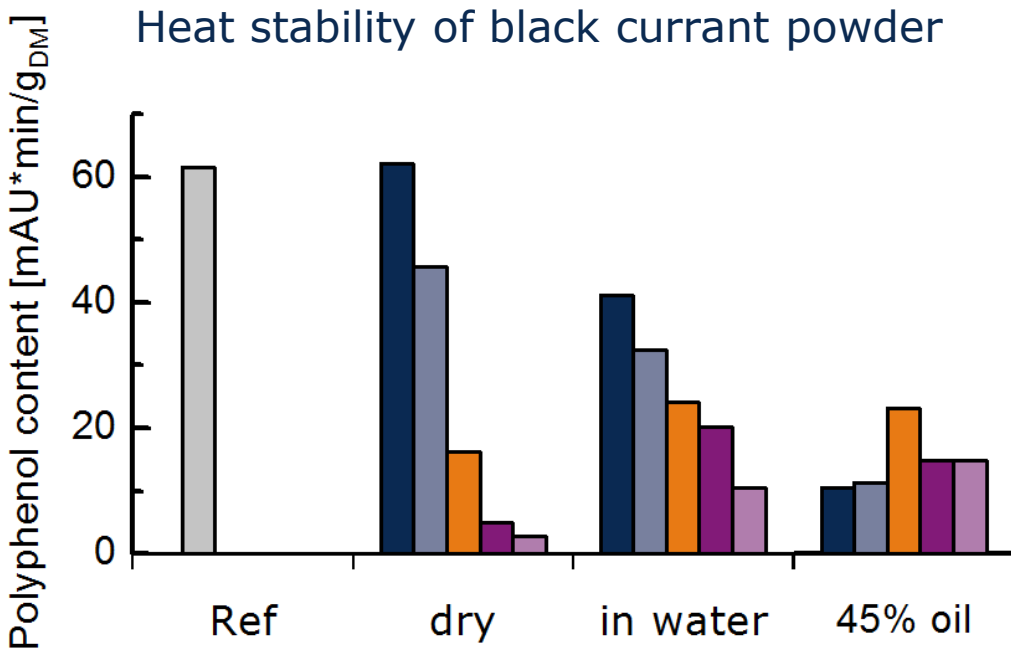


# In-depth characterisation

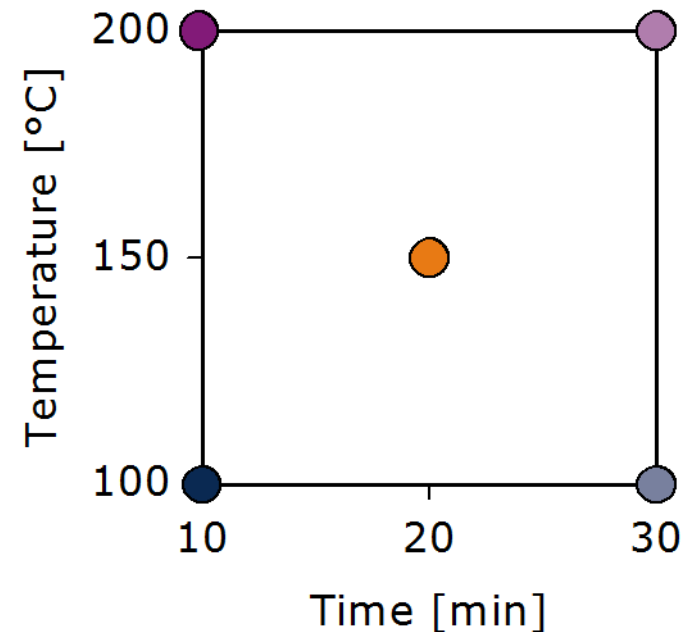
Flour replacement up to 30% → high in dietary fiber

## Bioactive compounds?

## Simulation of heat treatment in applications



Powder & Matrix:  
dry – in water – in oil



# Conclusion

P2.034

Literature work

Processing & extraction

Application in cereal-based products

In-depth characterisation

Environmental management

- Solutions for large scale production
- Consumer acceptance
- Conservation of Polyphenols

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