Effect of Pulse Flours on the Physiochemical Characteristics and Sensory Acceptance of Baked Crackers.

Kim Millar  
_Technological University Dublin_, kim.millar@tudublin.ie

Catherine Barry-Ryan  
_Technological University Dublin_, Catherine.Barryryan@tudublin.ie

Róisín Burke  
_Technological University Dublin_, roisin.burke@tudublin.ie

Sinead McCarthy  
_Teagasc Food Research Centre, Ashtown_, sinead.mccarthy@teagasc.ie

Eimear Gallagher  
_Teagasc Food Research Centre, Ashtown_, eimear.gallagher@teagasc.ie

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Application of Molecular Gastronomy principles in the design of pulse based functional foods

Kim A. Millar
Dublin Institute of Technology
Teagasc Food Research Centre
Overview

- Ingredients - *why pulses?*
- Molecular Gastronomy principles
- Current study
- Observations
  - Sensory attributes
  - Nutritional value
- Further work
Why pulses?

Nutritional
- High protein
- High fibre
- Phytonutrients
- Low fat
- Low sugar

Sustainable
- Robust
- Nitrogen fixing
- Cost efficient

Challenges
- Flavour
- Protein & Fibre
- Physiochemical properties
Molecular Gastronomy Principles

Holistic food design
Ingredients & Processing
Sensory experience
Nutritional value
Methodology

Formulation & Processing
- Bake trials
  - 40% flour
  - 21m & 31m
  - Prepared in triplicate

Physical & Chemical Analysis
- Dough TPA
- Colour & texture properties
- Protein & fibre
- Antioxidant activity

Sensory Analysis
- 9-point hedonics
- Appearance, colour & texture
- Anova ($p<0.05$)
Appearance & Colour

Control 31m

FB 31m
YP 31m
GP 31m

FB 21m
YP 21m
GP 21m

Overall Appearance

C 31m

GP 31m
GP 21m
YP 31m
YP 21m

FB 31m
FB 21m

P < 0.05
Colour: Instrumental vs Sensory

- a* value
- b* value
- Colour acceptance

P < 0.05

- L* value
- Colour acceptance

P < 0.05
Hardness & Mouthfeel

Hardness: Consumer acceptance

P < 0.05
Nutritional value
Antioxidant activity

TPC (mg GAE/100G)

DPPH (mg AAE/100g)

Flour type & bake time

P < 0.05

Flour type & bake time

P < 0.05
Future work in this area

• Optimisation of baking conditions
  • Nutritional and sensory

• Continued application of MG principles
  • Flavour profiling during processing
  • Flavour optimisation: the sensory experiences

• Further application of pulse flours
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How will you celebrate?