



Study of the role of arabinoxylans in wheat-based and gluten-free model matrices

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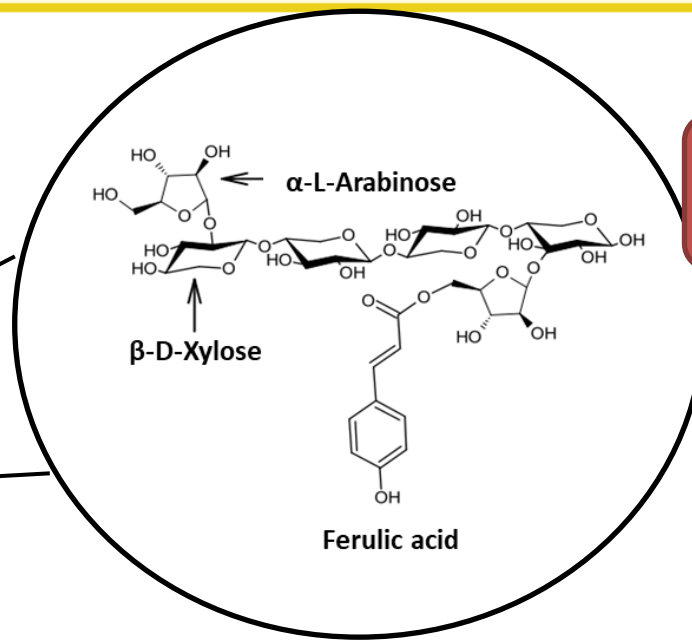
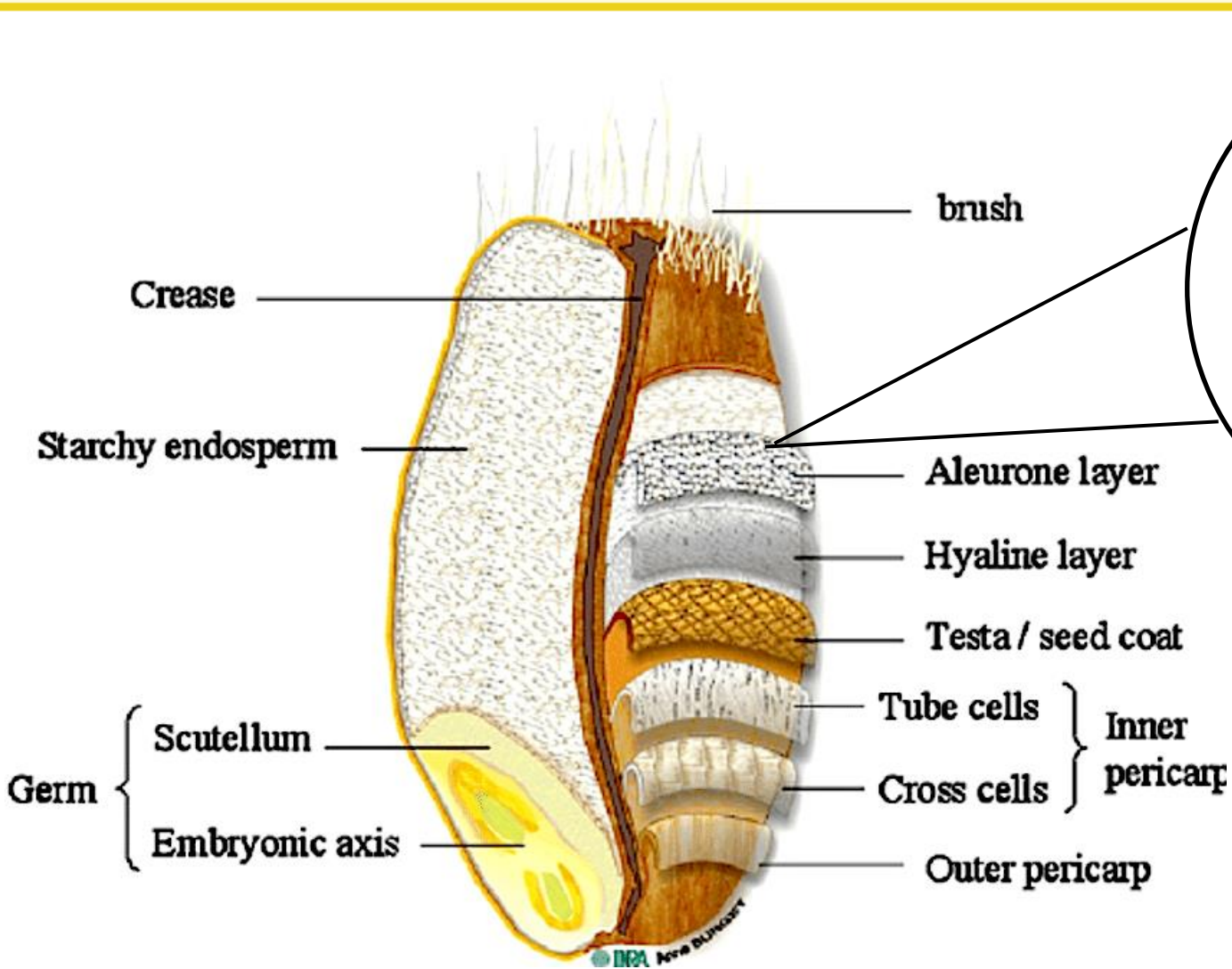
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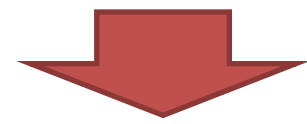
16-18th October 2022



Introduction



- Molecular weight
- Structure
- A/X ratio
- FA content



Nutritional and techno-functional properties



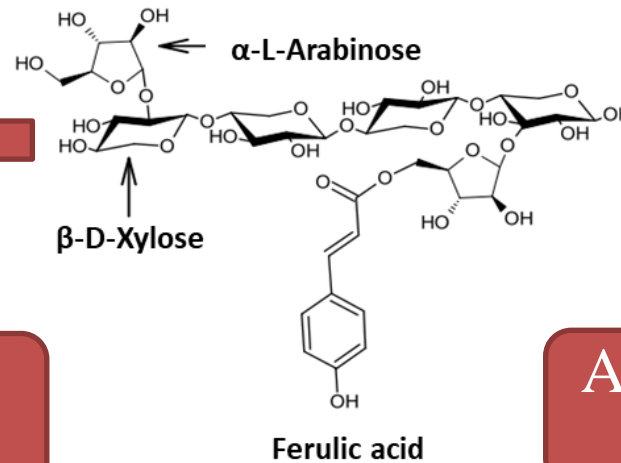
Objectives

Wheat-based matrices

AX addition and incorporation

Creating wheat-based model dough

Comparing the impact of AX addition and incorporation on rheological properties



Gluten-free matrices

AX addition and cross-linking

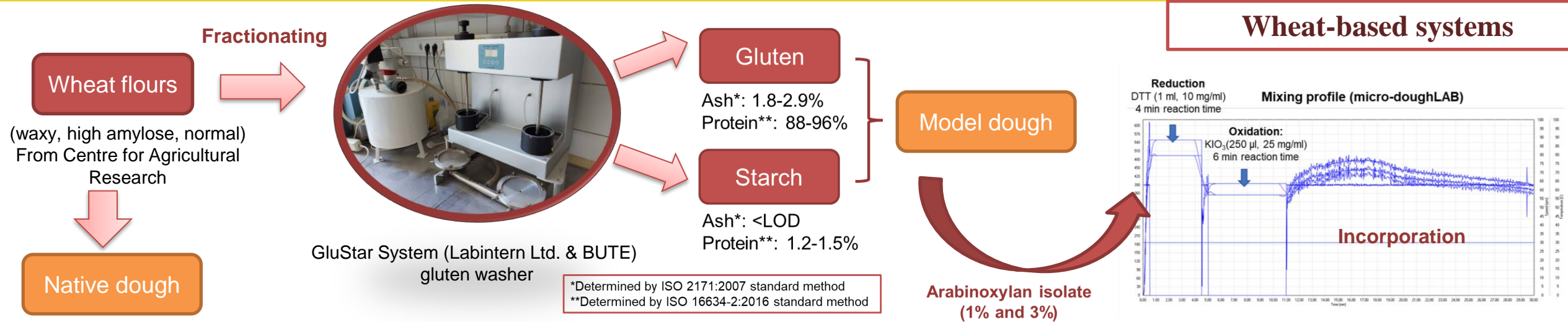
Study the effects on rheological and baking properties

Investigating macromolecular changes

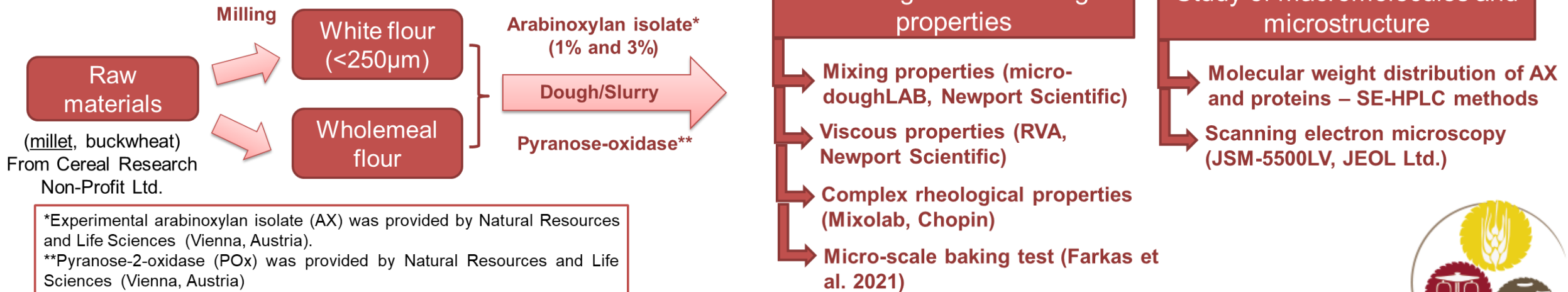


Materials and methods

Wheat-based systems

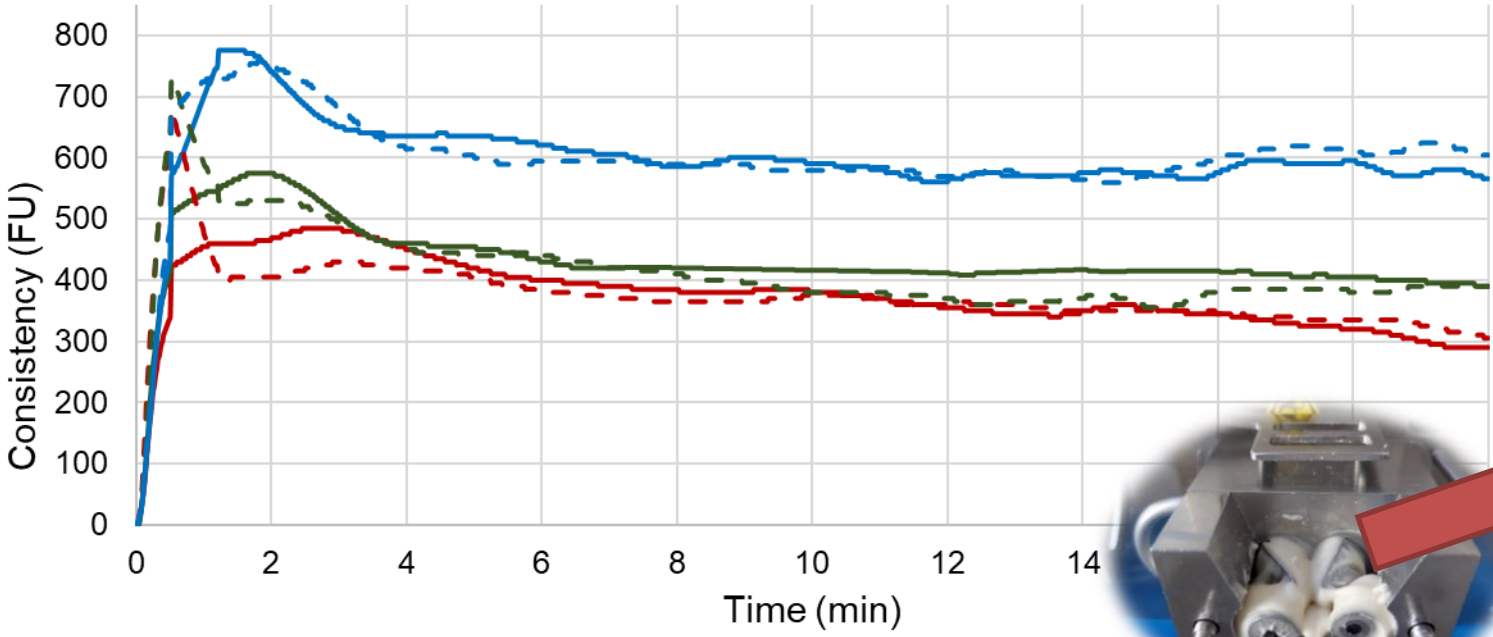


Gluten-free systems



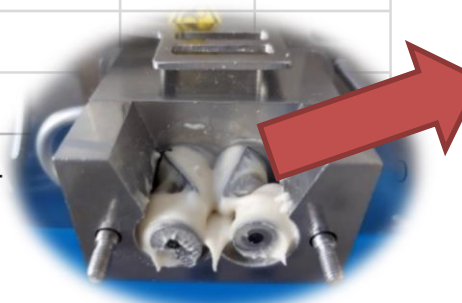
Results – Wheat matrices

Effect of AX addition and incorporation on mixing properties

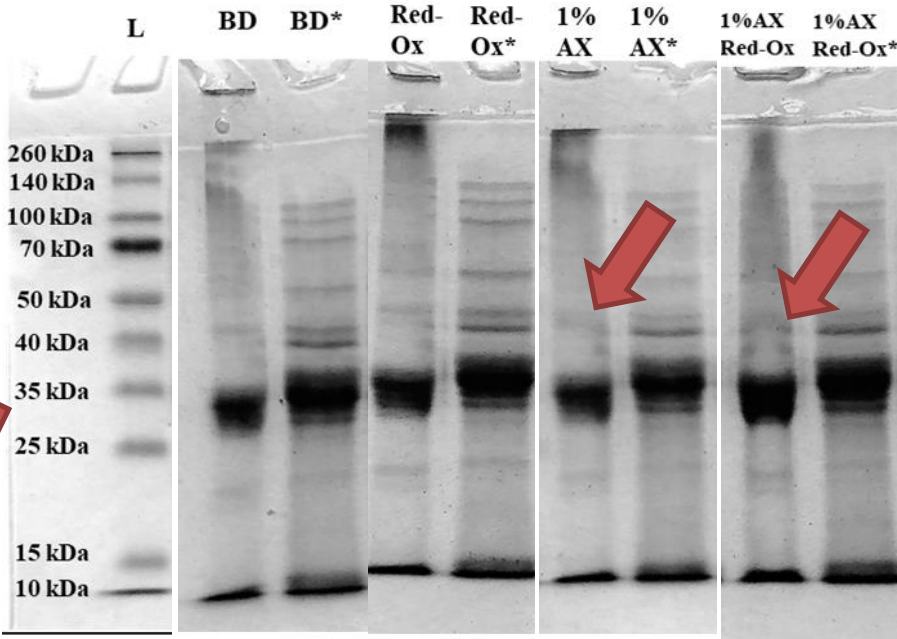


- Base dough
- - Red-Ox
- 1% AX
- - 1% AX + Red-Ox
- 3% AX
- - 3% AX + Red-Ox

Incorporation



Study of protein fractions by SDS-PAGE in model dough

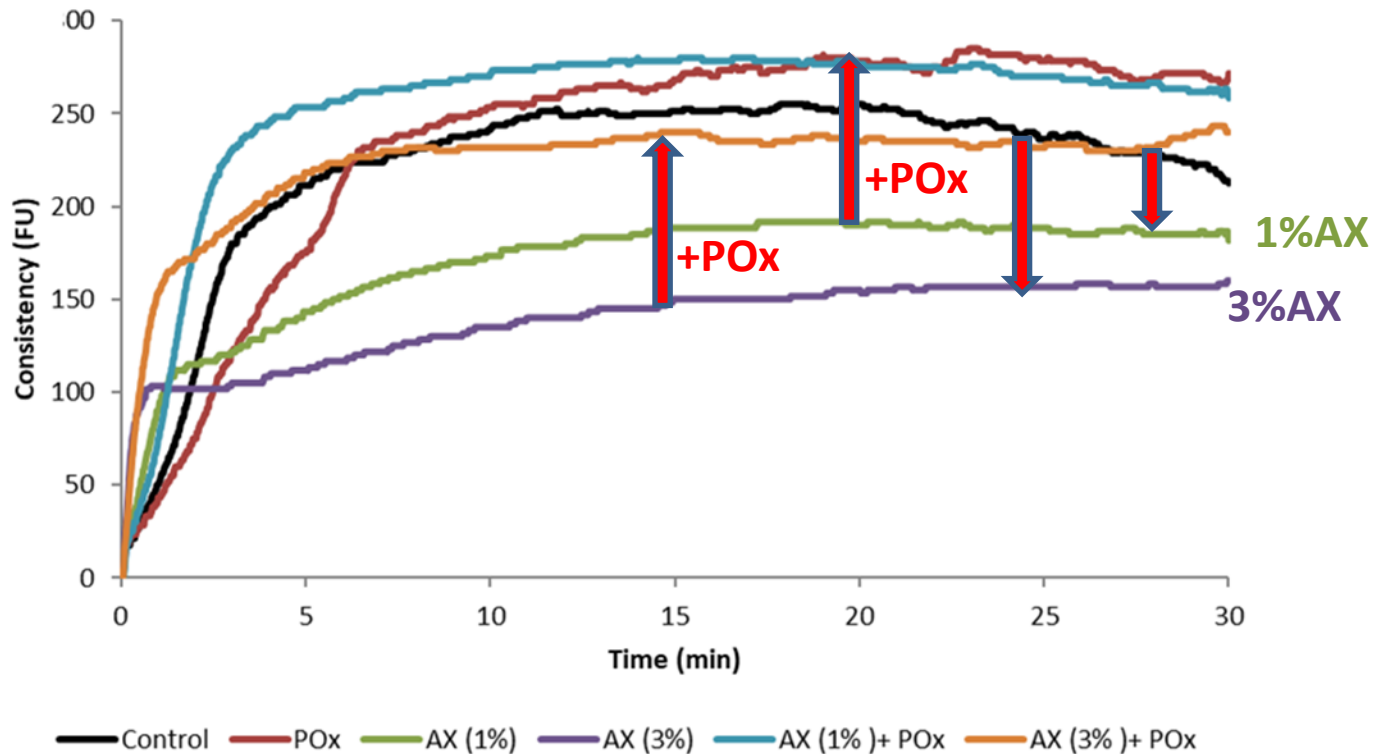


SDS PAGE of normal wheat model dough
 BD: base dough
 L: ladder

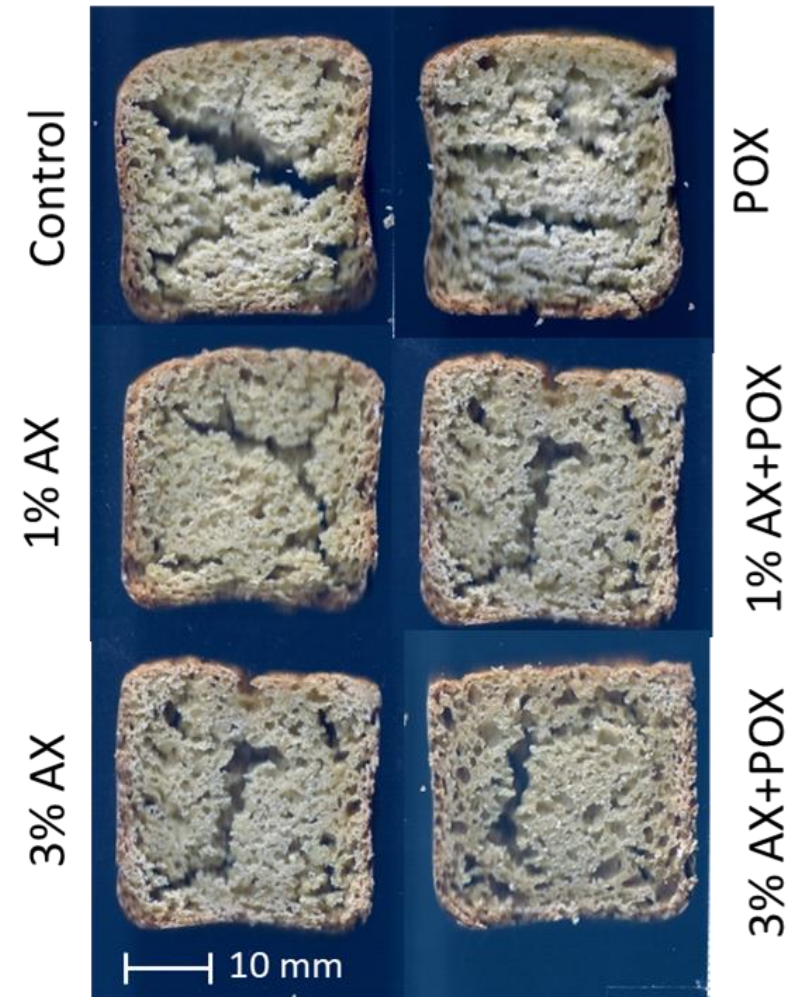


Results – Gluten-free matrices

Effect of AX addition and POx treatment on technological properties



Mixing properties of white millet dough (micro-doughLAB)

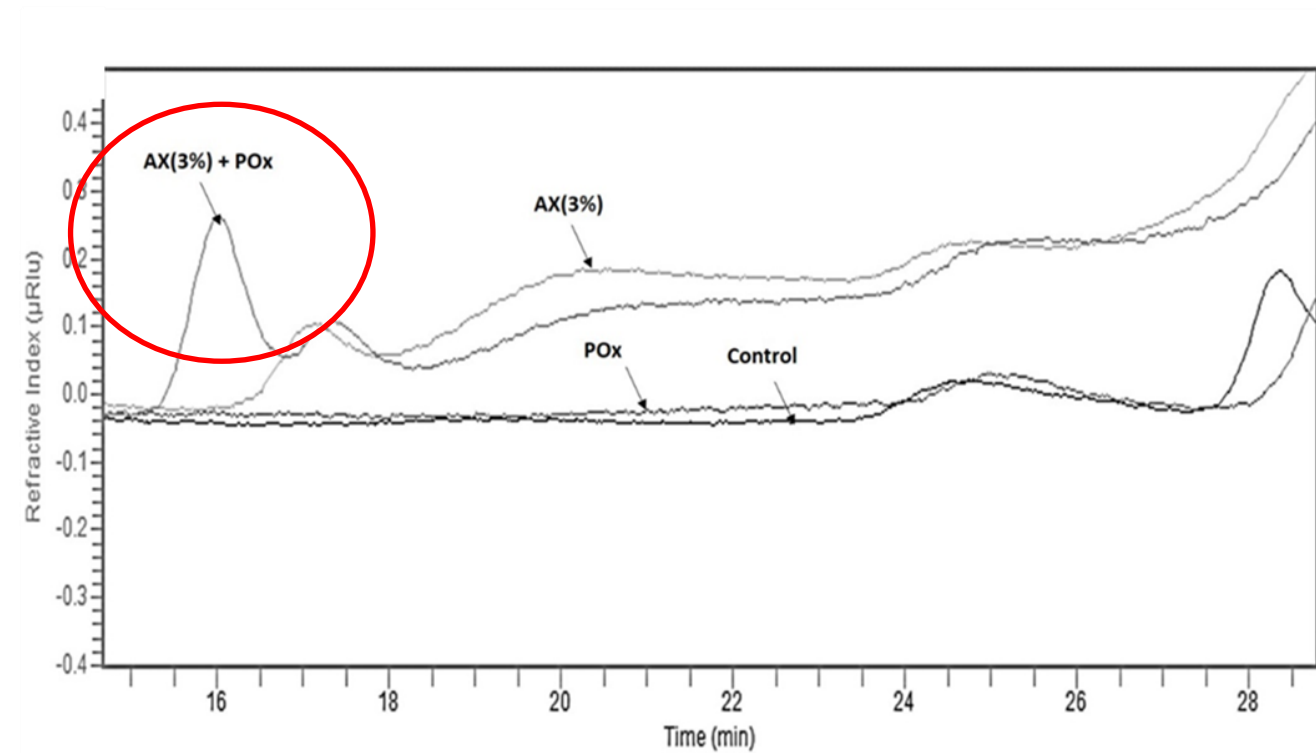


Baking quality of yeast fermented millet breads

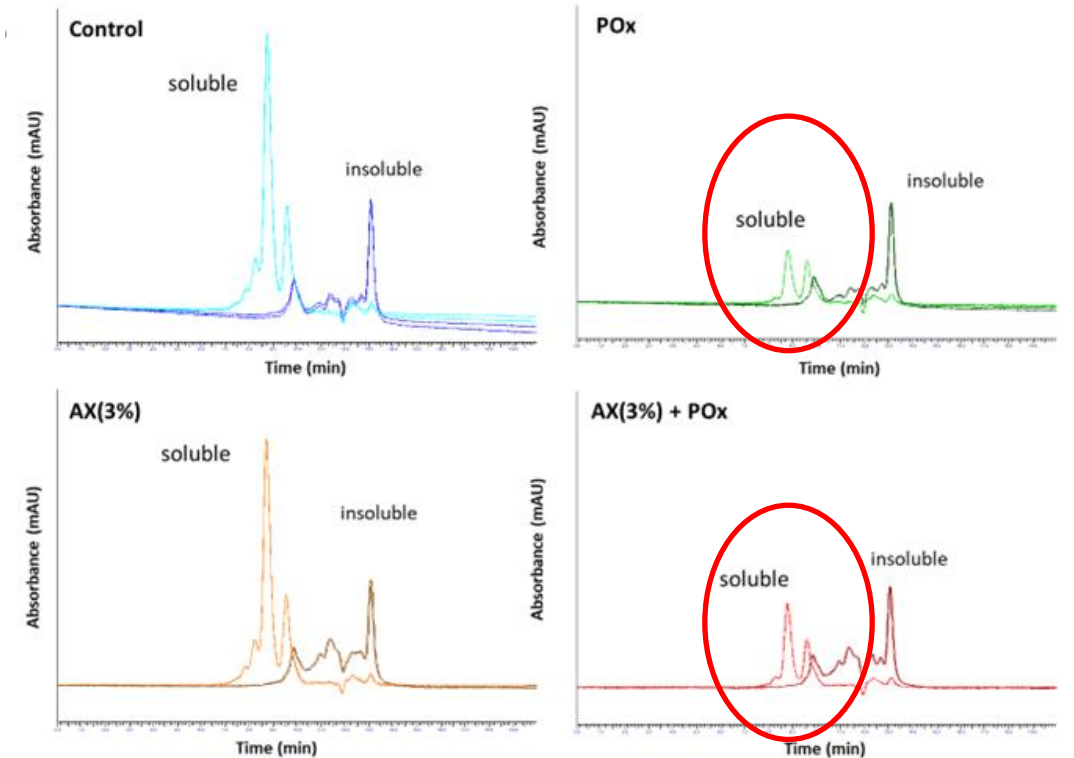


Results – Gluten-free matrices

Study of macromolecular changes in white millet doughs



Arabinoxylan molecular weight distribution (SE-HPLC)



Protein molecular weight distribution (SE-HPLC)



Summary and future plans

Role of arabinoxylans were investigated in wheat- based and gluten-free matrices

Creation of a appropriate model dough system was succesful

Incorporation of AX molecules into gluten network can be hypotesized

Interactions between macromolecules and AX molecules should be further investigated

AX addition combined with enzyme treatment improved technological properties

Cross-linking of AX molecules in gluten-free dough via enzyme treatment was confirmed

Real model dough systems might be useful to study macromolecular interactions



Thank you for your attention!



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