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## INTRODUCTION

The use of protein hydrolysates in bakery products is gaining importance due to the presence of bioactive peptides in their composition. Soy protein hydrolysates (SPHs) have gained interest due to the lack of antinutritional factors and presence of various bioactivities (antioxidant activity, cholesterol-lowering activity or immunoregulatory properties).

## OBJECTIVE

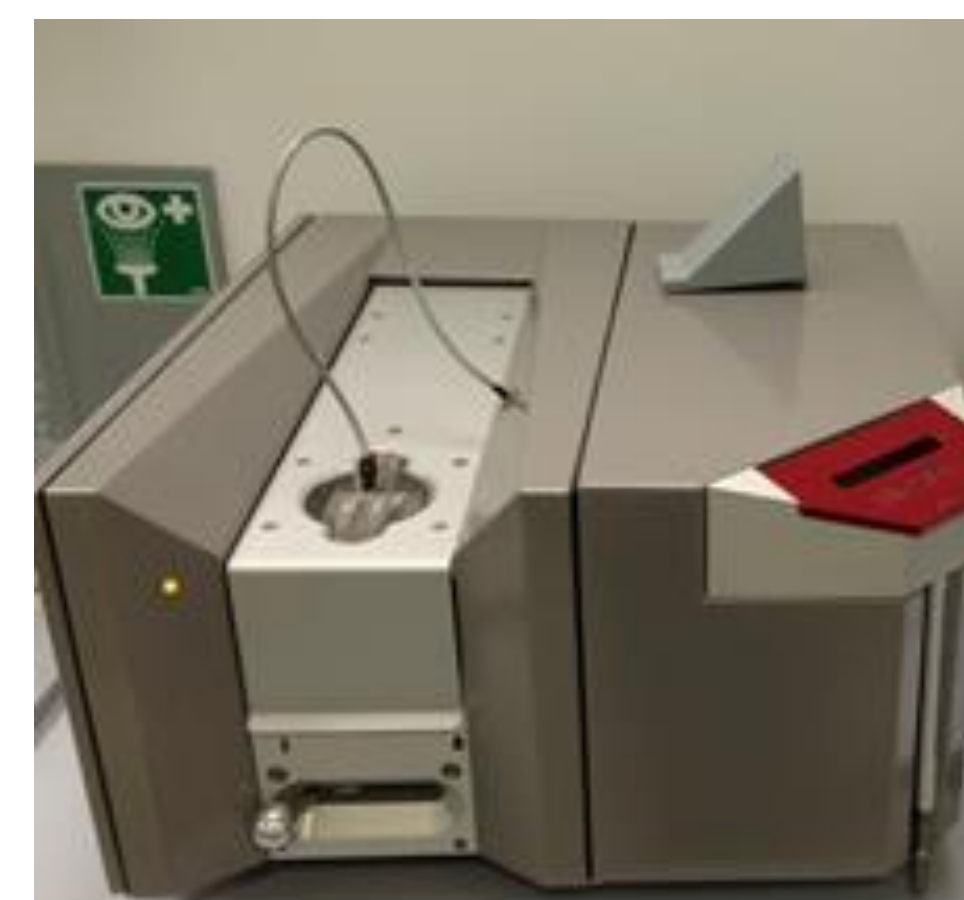
The aim of the study was to evaluate the dough rheology parameters of wheat flour replaced by 5% with different SPHs.

### Soy protein hydrolysates

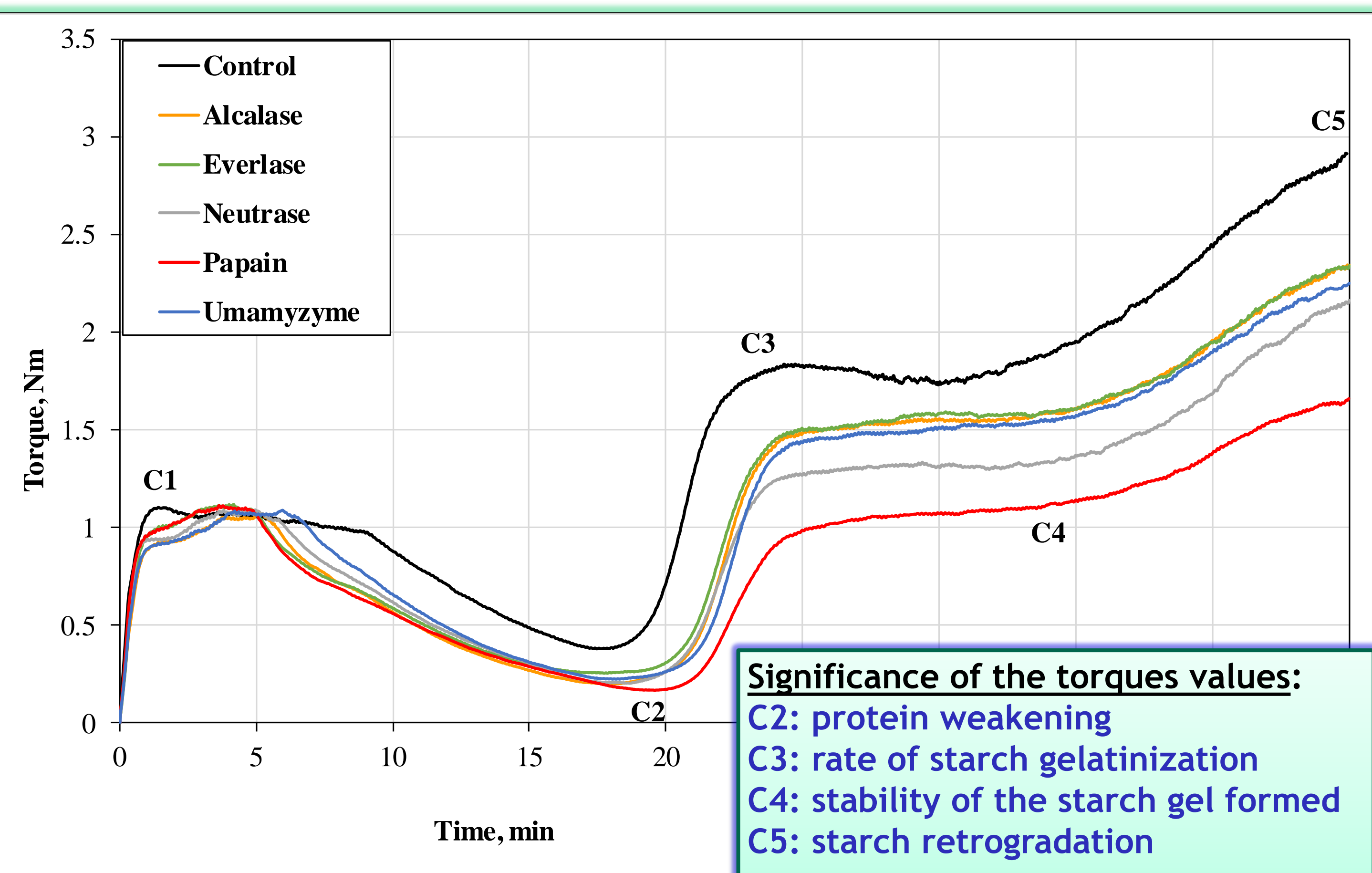
SPHs obtained from the hydrolysis of soy protein concentrate with proteases:

- Alcalase® 2.4L (from *Bacillus licheniformis*, EC 3.4.21.14, ≥ 2.4 U/g)
- Everlase® 16.0L (from *Bacillus* sp., ≥ 16 U/g)
- Neutrase® 0.8L (from *Bacillus amyloliquefaciens*, EC 3.4.24.28, ≥ 0.8 U/g)
- Papain (from *Papaya latex*, EC 3.4.22.2, 1.5 - 10 U/mg)
- Umamzyme (from *Aspergillus oryzae*, 74.3 U/g)

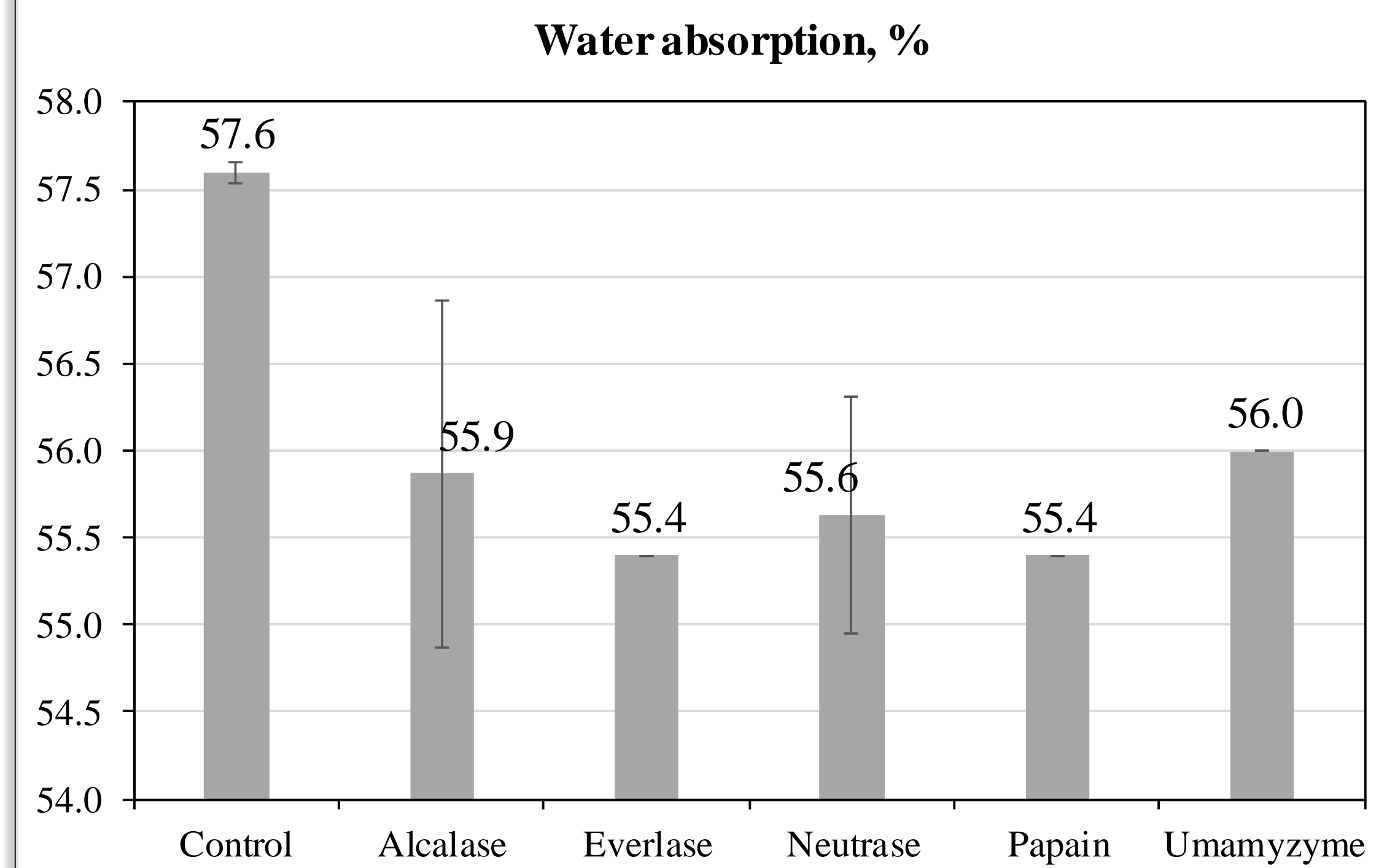
Rheological behaviour of wheat flour - SPH mixtures evaluated by Mixolab analyzer (Chopin Technologies)



## RESULTS



Sample	C2 (Nm)	C3 (Nm)	C4 (Nm)	C5 (Nm)
Control	0.37	1.82	1.68	2.82
Alcalase	0.19	1.21	1.54	2.31
Everlase	0.25	1.25	1.56	2.35
Neutrase	0.20	1.06	1.29	2.07
Papain	0.16	0.69	1.05	1.65
Umamzyme	0.23	1.25	1.52	2.29

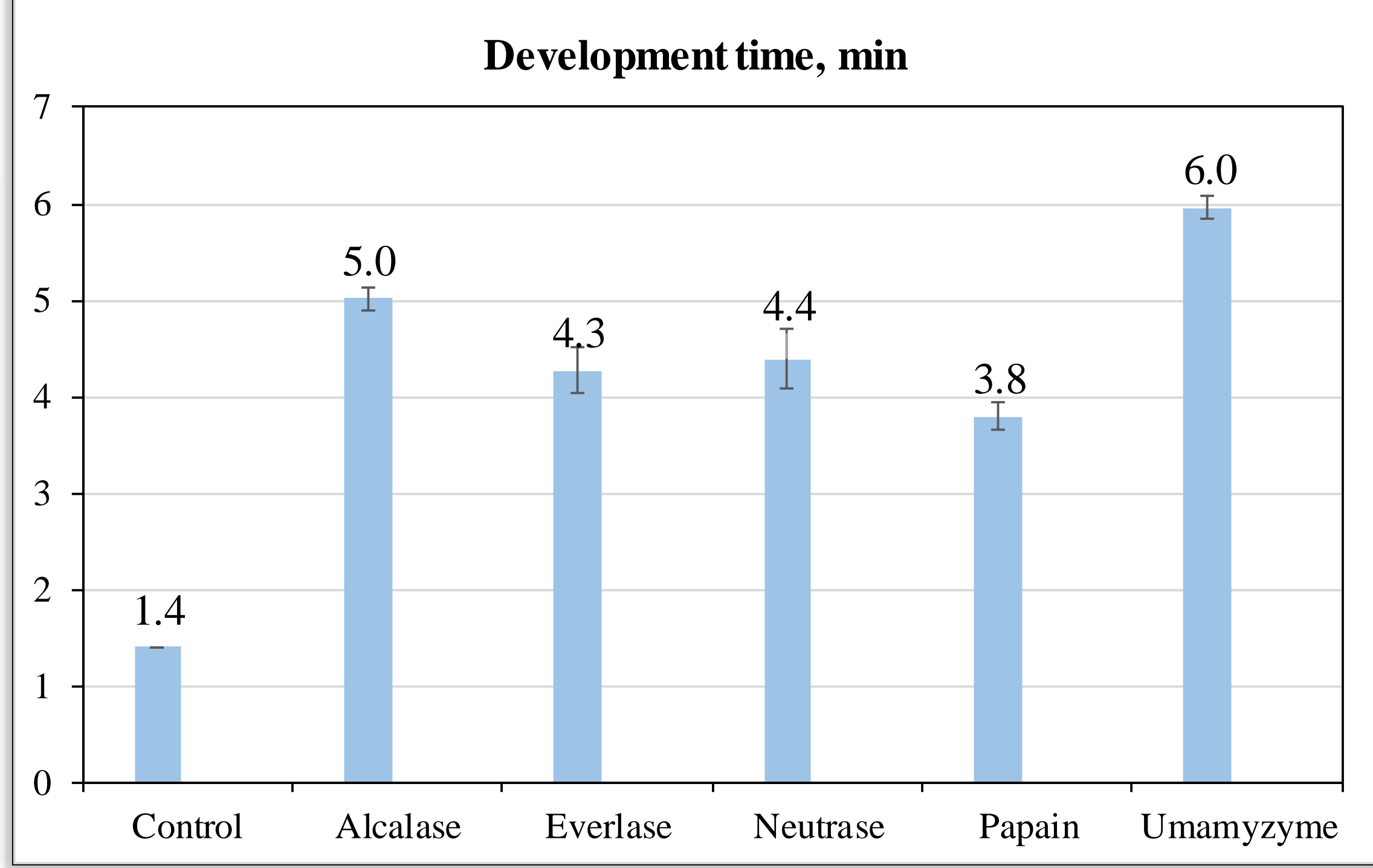
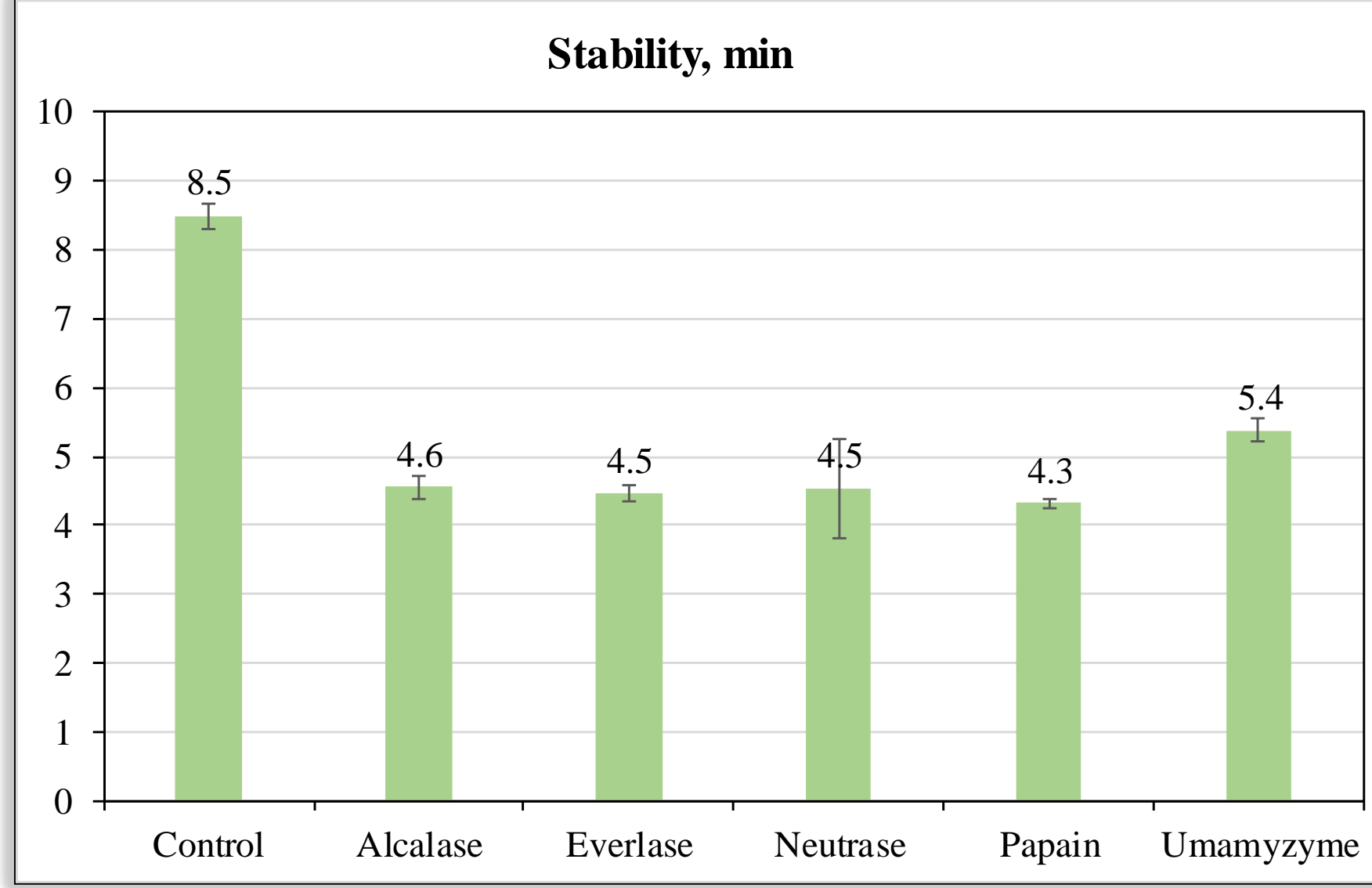


By SPHs addition, the rheological parameters of the dough were lowered. The decrease may be explained by the interactions between gluten / soy protein / starch, which reduce the starch gel viscosity.

- Neutrase and Papain showed the lowest capacity for starch gelatinization (lower C3 values)
- Neutrase and Papain produced the strongest amylase activity in the dough (lower C4 values)
- Neutrase and Papain showed low starch retrogradation (lower C5 values)

Compared with control, addition of SPHs produced:

- ✓ a decrease in water absorption
- ✓ a decrease in dough stability → revealed a deterioration of the gluten network
- ✓ an increase in development time



## CONCLUSIONS

Dough characteristics provided by Mixolab are the results of the interaction of SPHs components with the flour constituents. Papain hydrolysate could contribute to the increase of the shelf-life of bakery products.