

IMPACT OF PORRIDGE COMPOSITION ON ITS PHYSICO-CHEMICAL PROPERTIES AND STARCH DIGESTIBILITY AS ASSESSED BY *IN VITRO* ASSAY

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INTRODUCTION

The aim of this study was to design high protein and high fibre functional porridges and evaluate the effect of their nutritional properties on their performance during meal preparation as well as starch digestibility using an *in vitro* assay. Porridge blends were formulated using corn grits extrudates, oat flakes, oat bran, soy protein isolate, caseine and sweetening agents (xylitol, steviol glycosides and fructose) in different ratios in order to obtain high fibre porridge (HF), high protein porridge (HP) and high fibre/high protein porridge (HFP).

METHODS

Porridges were investigated for nutrients composition (ISO methods), water absorption capacity, rheological properties using HAAKE Mars rheometer (flow curve and dynamic oscillatory measurements) and rate and extent of starch digestion.

RESULTS AND DISCUSSION

All porridge samples, irrespective of the fibre and protein content, exhibited shear-thinning behaviour. The apparent viscosity and a shear thinning rheological response of prepared porridges (1:2.5 porridge to boiling water ratio) have been found to be strongly dependent on their water holding capacity. Porridge characterized with high protein content (HP) has expresses the highest water holding capacity, apparent viscosity and viscoelasticity. The physicochemical properties of porridges influenced *in vitro* starch digestion kinetics, i.e. the reducing sugars release and diffusion through a dialysis tube which was used to simulate the barrier of the small intestine epithelium. Among all tested samples, HF porridge exhibited the lowest starch enzymic susceptibility (39% during 300 min of digestion), which could be attributed to protective properties of present dietary fibres which can reduce starch accessibility to amyolytic enzymes by adhering on the starch granules.

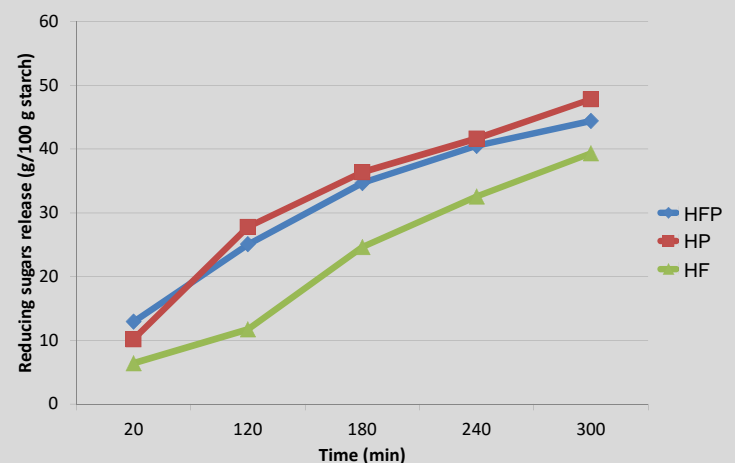
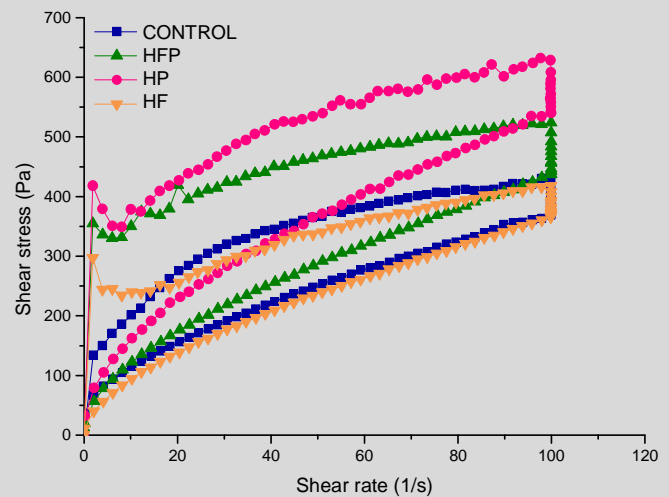
CONCLUSION

Overall, by combining natural fibre and protein sources it is possible to create porridges with improved nutritional-physiological-processing performance.

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Samples	Starch content (%)	Protein content (%)	Fiber content (%)	Water holding capacity (g/g)
CONTROL	n.d.	n.d.	n.d.	2.17
F (HFP)	26.79	17.34	26.42	2.86
K1 (HP)	36.19	17.51	18.95	2.99
K2 (HF)	41.04	7.71	26.59	2.41



Reviving TRAditional Breadmaking Processes through Innovative Approaches



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