

PhD Project Advertisement

Project title: Filling the fibre gap: functional and metabolic potential of high amylose wheat

Project No: FBS2022-55-Robertson-sr

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Project description:

Wheat is the most widely grown food crop and the most traded cereal in the world today. It is therefore a perfect foundation for raising the nutritional quality of the food supply to help improve overall health of communities worldwide. Selective breeding of commercial wheat has produced a variety which is very high in resistant starch, a type of dietary fibre which has documented beneficial metabolic effects for glucose and lipid metabolism. Dietary fibre is the nearest thing we have to a super-food with the known beneficial effects on the gut microbiome, gastrointestinal cancers and metabolic disease, but intakes fall well below recommended levels. The question is, can this new type of wheat fill this fibre-gap?

This high-amylose wheat clearly has a great potential to improve human health if it enters the food chain, but at the moment there are several challenges which need to be overcome such as understanding how to incorporate this high insoluble-fibre wheat into food staples in the diet such as bread, biscuits and pastry, and further define the metabolic effects of consumption in humans.

Using a combination of cutting-edge food technology methods and dietary interventions in human volunteers, this project aims to investigate and maximise the incorporation of this wheat into different food products; evaluate the sensory qualities and consumer attitudes to this novel wheat variety and quantitate the glucose lowering effects of consumption in a dietary intervention trial.

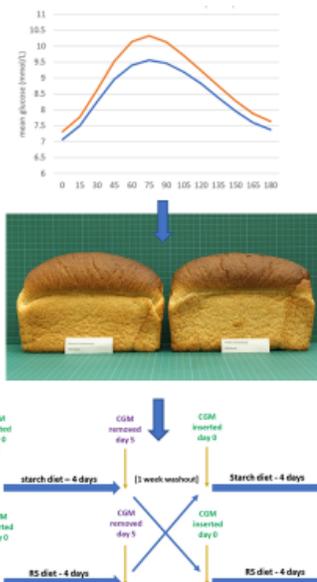
Objectives

- (i) Determine glycaemic effects of different levels of HAW substitution and dose
- (ii) Investigate effects on food physical properties and structure
- (iii) Manufacture prototypes with similar sensory properties to regular wheat.
- (iv) Replace wheat starch in diet with HAW foods.



High-amylose wheat (HAW)

↑ Resistant Starch



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Training opportunities:

There will be training opportunities in human-based research, laboratory food technology and sensory science at the Universities of Surrey and Reading. This project comes with the opportunity of undertaking a placement with Limagrains Cereales Ingredients (Europe) at their main site in Clermont Ferrand, France.

Student profile:

This studentship is available only to individuals who are eligible for UK fees status. The project would be suitable for a student with a degree in food science and nutrition, with a keen interest in learning new laboratory and clinical techniques. We would expect the successful candidate to have already some laboratory food science experience.

Stipend (Salary):

FoodBioSystems DTP students receive an annual tax free stipend (salary) that is paid in instalments throughout the year. For 2022/23 this will be £16,062 and this will increase slightly each year at rate set by UKRI.

For up to date information on funding eligibility, studentship rates and part time registration, please visit the FoodBioSystems website.

Equality Diversity and Inclusion:

The FoodBioSystems DTP is committed to equality, diversity and inclusion (EDI), to building a doctoral researcher(DR) and staff body that reflects the diversity of society, and to encourage applications from under-represented and disadvantaged groups. Our actions to promote diversity and inclusion are detailed on the [FoodBioSystems DTP website](#).

In accordance with UKRI guidelines, our studentships are offered on a part time basis in addition to full time registration. The minimum registration is 50% FT and the studentship end date will be extended to reflect the part-time registration.

References:

Belobrajdic et al, High-Amylose Wheat Lowers the Postprandial Glycemic Response to Bread in Healthy Adults: A Randomized Controlled Crossover Trial, *The Journal of Nutrition*, 149, 8, Pages 1335–1345, <https://doi.org/10.1093/jn/nxz067>