OCTOBER 2017

Creating healthier food options for Welsh school children

SBRI funded project update

CyberColloids has embarked on a new technical research investigation in collaboration with Welsh partners Pennotec, based in Gwynedd and the Biocomposites Centre, Bangor University in the fight against childhood obesity in Wales.

The project aims to develop new functional food ingredients from surplus food industry resources in Wales and use them to replace high calorie ingredients such as fat, in the kinds of food that are particularly enjoyed by Welsh school children.

Wales, like the rest of the UK and Europe, generates thousands of tonnes of surplus fresh food resources such as apples, that never make it to the supermarket shelves because they are out-graded, surplus to requirements or are processed and thus only partly utilised. These surplus materials are a rich source of natural fibre components and have many beneficial nutritional properties.

In this project we are targeting the potential to utilise these fibres to provide textural functionality that allows for the reduction of high calorie ingredients, in particular fat.

The diets of Welsh consumers typically have 11% more fat than recommended levels and not enough fibre[1]. Recent statistics show that more than a quarter of reception year school children in Wales are particularly at risk[2]. By targeting school menu items, we aim to relieve some of the burden placed on providing nutritious food in the home.

Our apple fibres are being produced from Welsh apple pomace and processed using different techniques at the Biocomposites Centre, Bangor University.

This project is overseen by Welsh Government's Food and Drink Division and supported financially through the Innovate UK and Welsh Government Small Business Research Initiative

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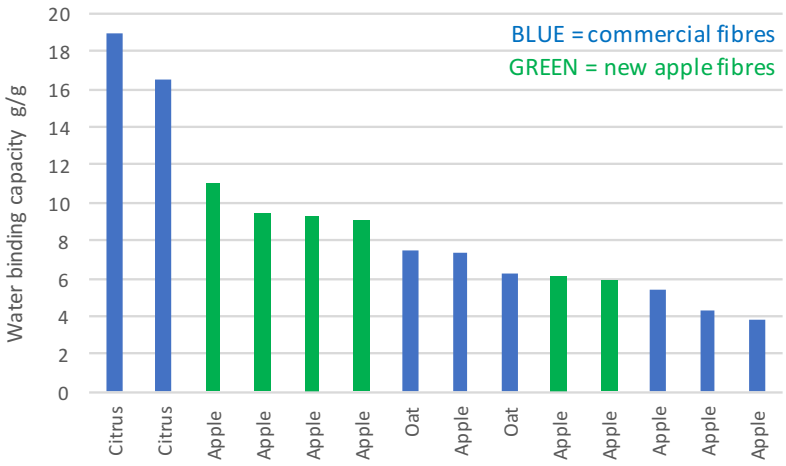
Using fruit and vegetable fibres to replace fat relies on the capacity of the fibre to bind and thus structure water, this in turn provides viscosity & texture.

Standard fruit and vegetable fibres that are currently in the market place typically bind up to around 5 times their own weight in water. Fibres that have been functionalised in some way i.e. processed in order to promote their water binding capacity, can bind water in the region of 10 to 20 times their own weight.

We have evaluated the water binding capacity of some commercially available fibres and compared these with new apple fibres that have been produced in this project (Graph below). Our fibres compare very favourably and can bind water at 6 to 11 times their own weight. We are still working on improving the functionality of the new apples fibres, early indications are that a 40% increase in water binding capacity (on average) is achievable.



NB: Water binding capacity is quantified in g/g terms i.e. g water bound per g of fibre (where "fibre" refers to the product itself and not the fibre content of the product).

To date, we have evaluated the fat reduction potential of selected fibres in baked products and have achieved some very promising results. Ultimately we wish to demonstrate this potential in a far wider range of food items that children typically enjoy.

In addition to tackling the issue of child obesity in Wales, our hope is that this project will also make a significant contribution to the circular economy and to building a sustainable agri-food sector in Wales.

Contact us for more information about this project.

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[1] National Food Poverty Seminar, 2017 [2] The Child Measurement Programme in Wales 2015-16