**Functionalising cellulose waste as a replacer for starch, as a functional food ingredient.**

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Food Security and sustainability are threatened by the current exponential growth in population, with experts projecting an increase from 7.4 billion in 2017 to 9.7 billion by 2050 [2].  Current solutions to combat threats include utilisation of food waste, which is likely to be the most impactful solution. Excluding the utilisation into animal feeds, 1/3of all food production is wasted [1]; equating to 10 million tonnes annually just within the United Kingdom, of which 60% could have been avoided [3]. This work aims to build understanding of the quality of food waste and potential to be utilised as a functional food ingredient within model systems.

One particular model of naturally occurring “green” cellulosic waste stream was investigated: *Pisum sativumn* vines, stems and leaves (pea plant biomass once seeds are removed). Specifically investigating the fibre (pulp) fraction recovered from the pea biomass after juicing. The research presented will focus on functional quality of the fractions following different means of processing. Fibrillation of pea fibre is investigated by mechanical disruption using several methods including milling and homogenisation. As well as ball-milling to enable functionalisation of the waste material by controlling the degree of amorphous cellulose. Properties of this ball milled material were explored with the potential to replace or work in co-ordinance with starch for future healthier based food products and gave promising rheological results.

References:

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