**Consumer-driven hydrocolloid-based food design considering interaction with saliva**

X Li1, MM Kasprzak1,2, R Ford1, SE Harding1, B Wolf1,3

*1School of Biosciences, University of Nottingham, Loughborough LE12 5RD, UK*

*2present address: Devro Limited, Chryston G69 0JE, UK*

*3present address: School of Chemical Engineering, University of Birmingham, Birmingham B12 5TT, UK*

Following ingestion, food is mixed with saliva while is it being broken down by the mechanical action of teeth and tongue. The purpose of these oral processes is to generate a food bolus that is safe to swallow. Concurrently, flavours are released and mouthfeel perceptions are generated. The interaction between food components goes beyond simple dilution. It may therefore be exploited in the design of foods by changing functional properties through physical interaction or amylase mediated hydrolysis of starches.

Comparing the rheological properties of guar gum to xanthan gum mixed with saliva or water, it was shown that for rigid rod polymers extensional viscosity increases1. As this observation is of potential interest in the context of designing foods for dysphagia patients, for which increased extensional viscosity assists a safe swallow2 an extension of this study to anther hydrocolloid with predicted rigid rod conformation, and its molecular characterisation, will be presented. Amylase mediated hydrolysis of starches may also be exploited to affect viscosity, but, more interestingly, it can be taken advantage of in the design of emulsion interfaces for oral destabilisation. Recent advances in the stabilisation and breakdown of starch stabilised emulsions, including the use of non-chemically modified starches3, to contribute to salt and sugar reduction targets will be presented.

*References:*

1 Choi, H., Mitchell, J., Gaddipati, S.R., Hill, S.E. and Wolf, B. (2014). Shear rheology and filament stretching behaviour of xanthan gum and carboxymethyl cellulose solutions in presence of saliva. *Food Hydrocolloids*, 40, 71-5.

2 Hanson, B. (2016) A review of diet standardization and bolus rheology in the management of dysphagia. *Current Opinion in Otolaryngology & Head and Neck Surgery*, 24(3), 183-90.

3 Kasprzak, M.M., Macnaughtan, W., Harding, S., Wilde, P. and Wolf B (2018). Stabilisation of oil-in-water emulsions with non-chemical modified gelatinised starch. *Food Hydrocolloids*, 81, 409-18.