



UNIVERSITY OF LEEDS

This is a repository copy of *Effect of amylose and amylopectin content on the colloidal behaviour of emulsions stabilised by OSA-Modified starch.*

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/166404/>

Version: Supplemental Material

Article:

Mu, M, Karthik, P, Chen, J et al. (2 more authors) (2021) Effect of amylose and amylopectin content on the colloidal behaviour of emulsions stabilised by OSA-Modified starch. *Food Hydrocolloids*, 111. 106363. ISSN 0268-005X

<https://doi.org/10.1016/j.foodhyd.2020.106363>

© 2020, Elsevier. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

Reuse

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Supplementary Materials

Table S1. Composition of artificial saliva used in current work

Chemicals	Content (g/L)
NaCl	0.111
KCl	1.492
NaHCO ₃	3.948
CaCl ₂	0.278
MgCl ₂ · 6H ₂ O	0.096
Mucin from porcine stomach type II	1.5
α-amylase from porcine pancreas (4000 U/g)	2

Table S2. Flow consistency index (k) and flow behaviour index (n) of emulsion samples W and N, with and without addition of salt. Results were obtained by fitting the power law fluid equation to apparent viscosity vs. shear rate measurements.

	W, no salt			N, no salt			W, 0.2M			N, 0.2M		
	Day 0	Day 11	Day 21	Day 0	Day 11	Day 21	Day 0	Day 11	Day 21	Day 0	Day 11	Day 21
k	0.0021	0.0027	0.0022	0.0016	0.0020	0.0023	0.0026	0.0017	0.0017	0.0119	0.0276	0.0304
n-1	0.0079	-0.0485	-0.0026	0.0441	0.0108	-0.0144	-0.0589	0.0344	0.0431	-0.1767	-0.3820	-0.3522

Fig. S3. Droplet size distribution of the emulsions prior to enzymatic digestion, A) emulsion W, B) emulsion N. Initial similarity of the distributions in both emulsions is quite evident from these graphs.

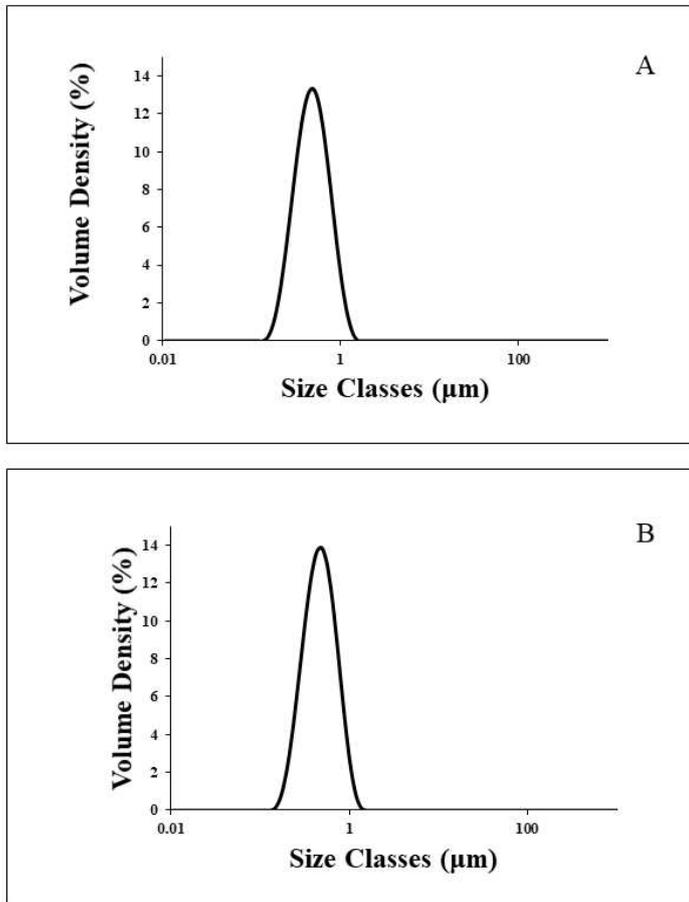


Fig. S4. Average size of the oil droplets in emulsions W and N, at pH= 6.8, plotted vs. storage time. The graphs highlight the excellent stability of both emulsions in the absence of any enzymatic treatment.

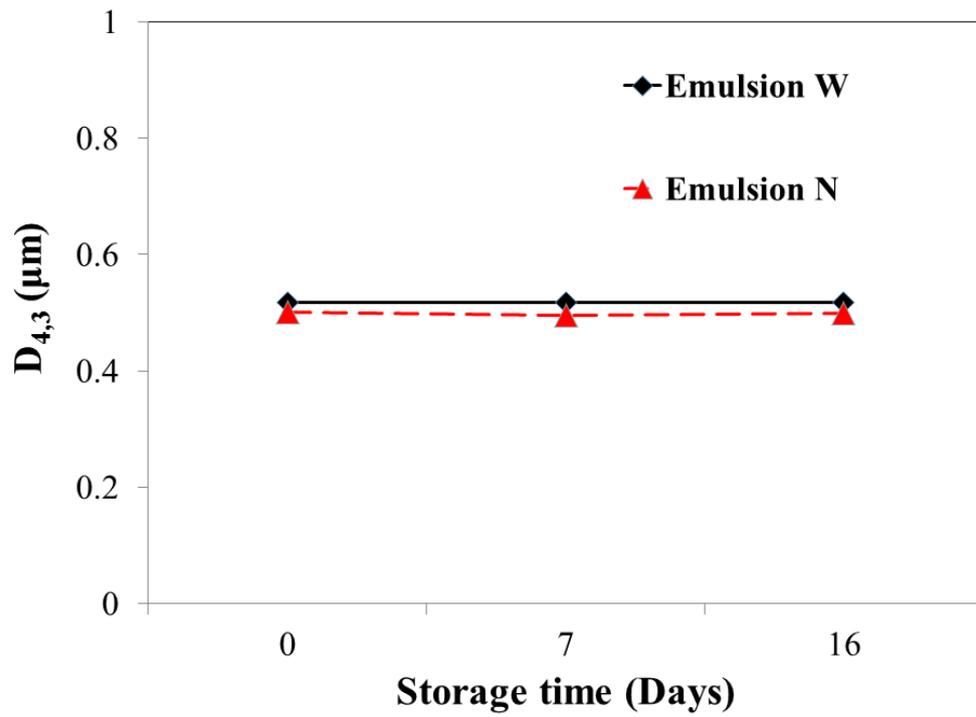


Fig. S5. Backscattering (IR) profiles of emulsions W and N mixed with all the electrolytes and mucin in artificial saliva, but without the enzyme α -amylase. The percentage BS is reported at equal time intervals of 30 seconds, from 0 - 20 min following the mixing, throughout the entire height of the emulsion sample (0 - 40 mm). These results demonstrate that in the absence of α -amylase, the addition of other components of the artificial saliva had no major impact on the stability of either emulsions, in the first 20 minutes.

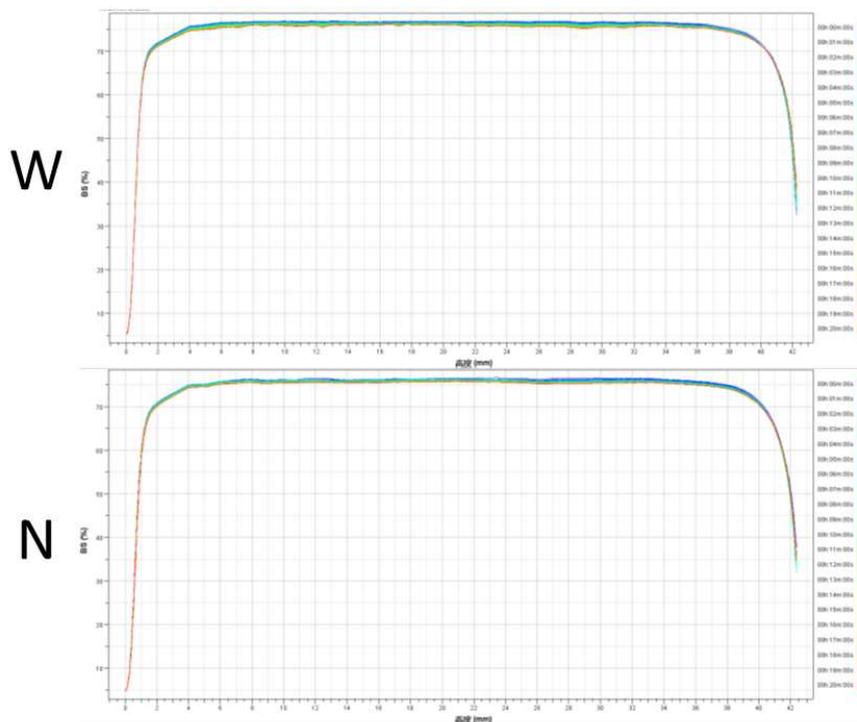


Fig. S6. Apparent viscosity of starch solutions plotted as a function of shear rates. Curves for (A) OS-W and (B) OS-N are displayed.

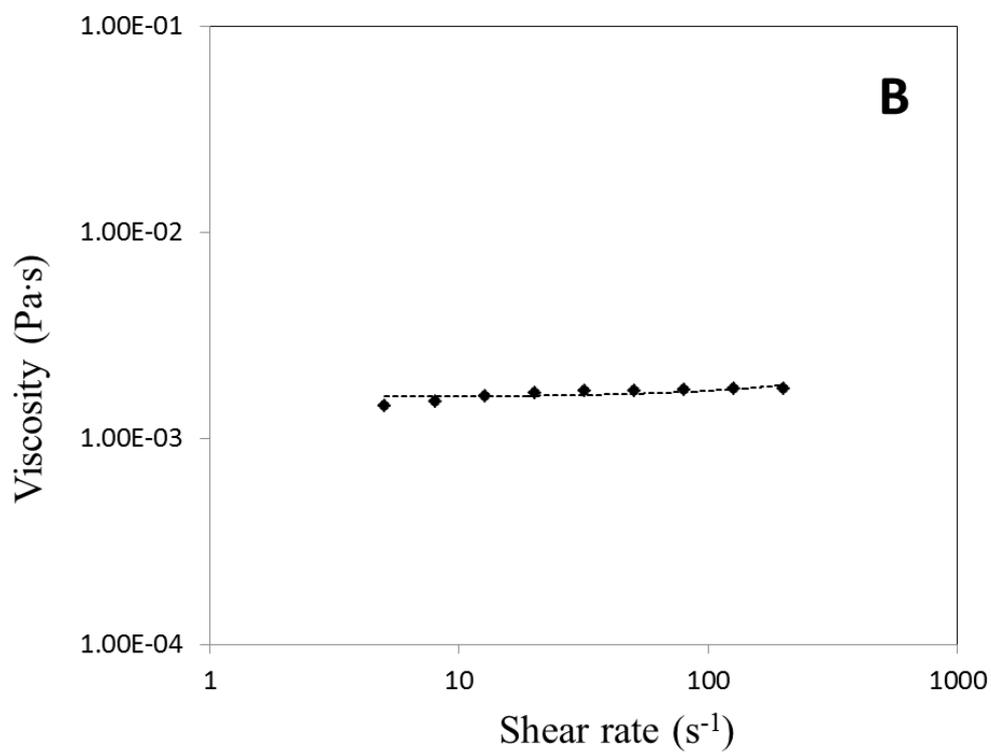
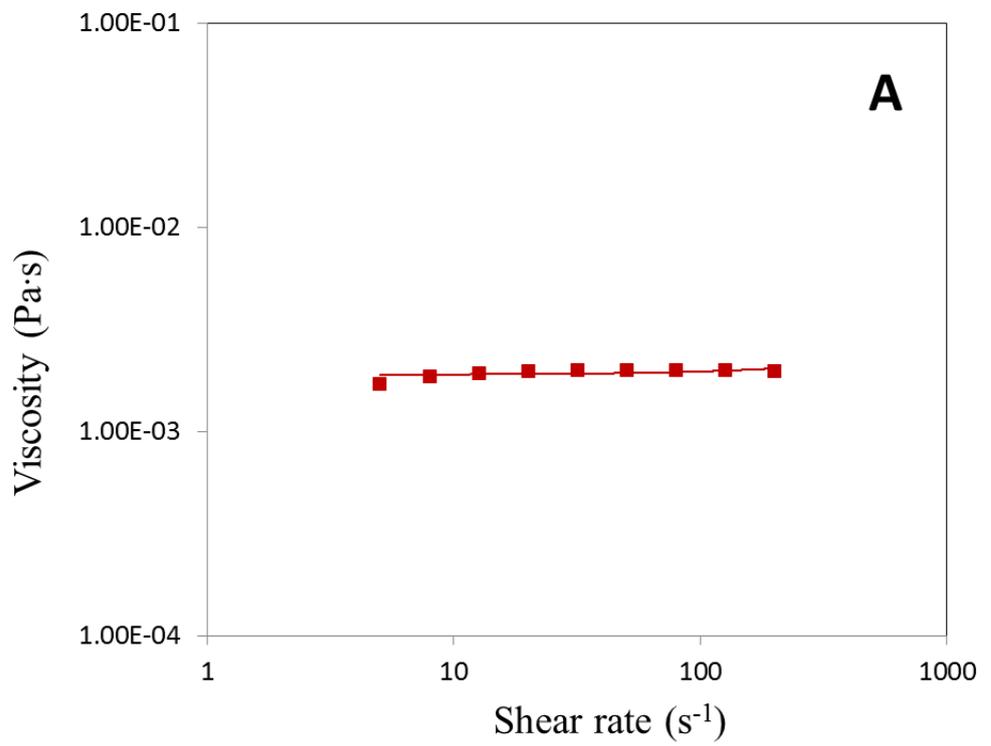


Fig. S7. Droplet size distribution of emulsion N with the addition of 0.2M NaCl after 0 and 7 days of storage, before and after the addition of 2% SDS, plotted on a linear scale.

