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# 1 Interactions of bile salts with a dietary fibre, methylcellulose, and impact 2 on lipolysis

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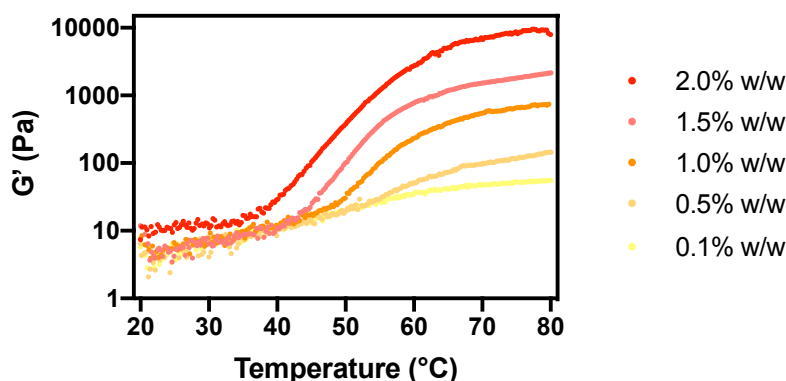
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25 Institute of Pharmaceutical Science  
26 Franklin-Wilkins Building

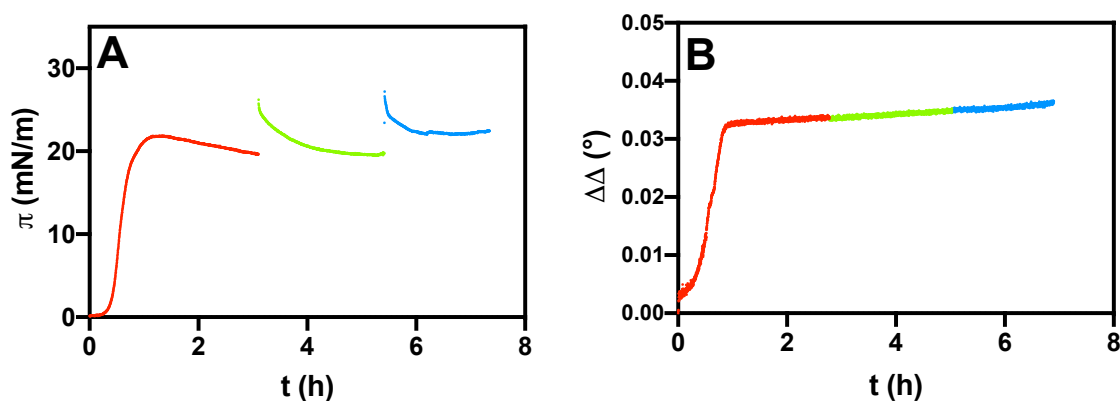
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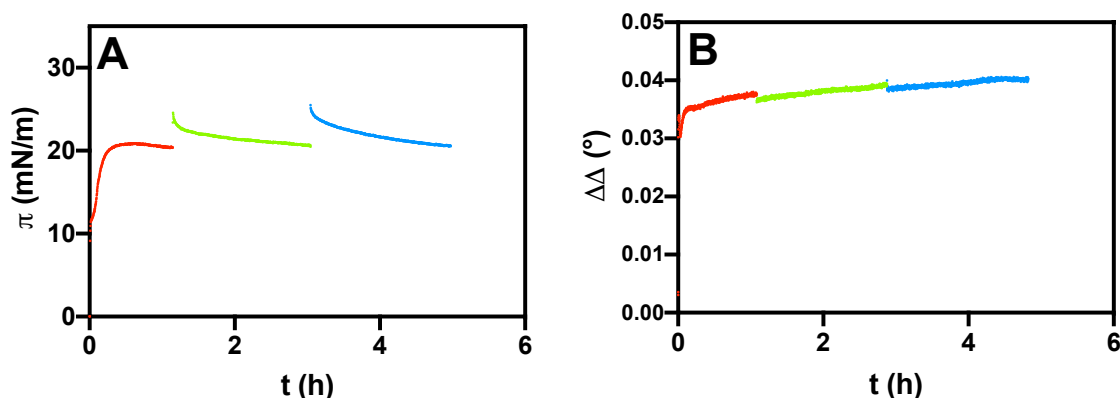
31 **Supporting information**



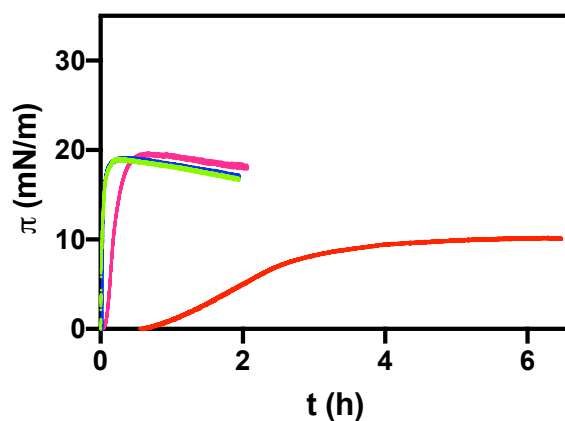
32  
 33 **Figure S1:** Temperature-dependent evolution of the storage modulus ( $G'$ ) obtained from dynamic temperature sweeps, on  
 34 MC aqueous solutions prepared at different concentrations (0.1, 0.5, 1.0, 1.5 and 2.0% w/w).  $G'$  dominates over  $G''$  at all  
 35 concentrations and temperatures;  $G''$  was therefore omitted for clarity.



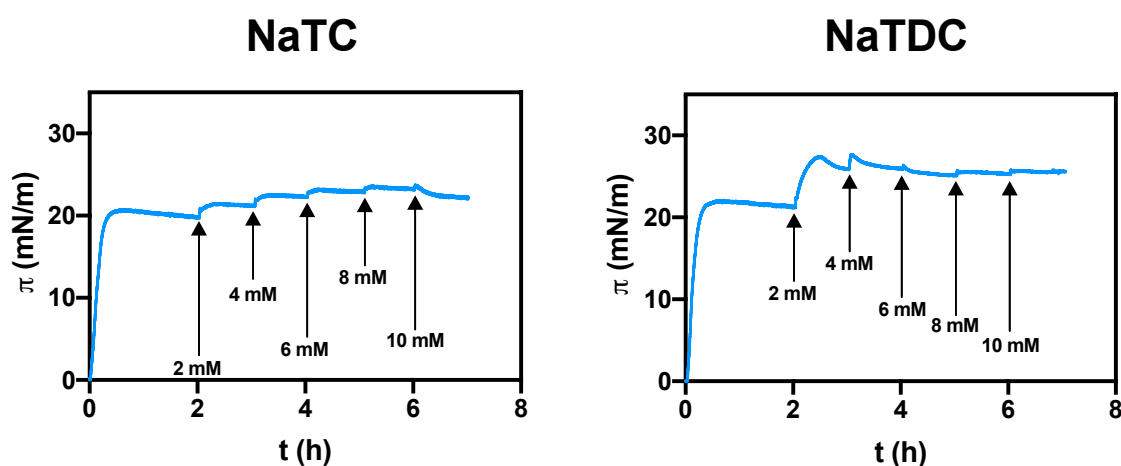
36  
 37 **Figure S2:** Time-dependent evolution of (A) the surface pressure ( $\pi$ ) measured in a Langmuir trough, and (B) phase shift  
 38 ( $\Delta\Delta(t) = \Delta(t) - \Delta_0$ ) measured by ellipsometry, upon successive injections of MC: (—)  $0.5 \times 10^{-1}\%$  w/w, (—)  $0.25\%$  w/w, (—)  
 39  $0.5\%$  w/w, into the aqueous subphase (at  $23 \pm 2^\circ\text{C}$ ).



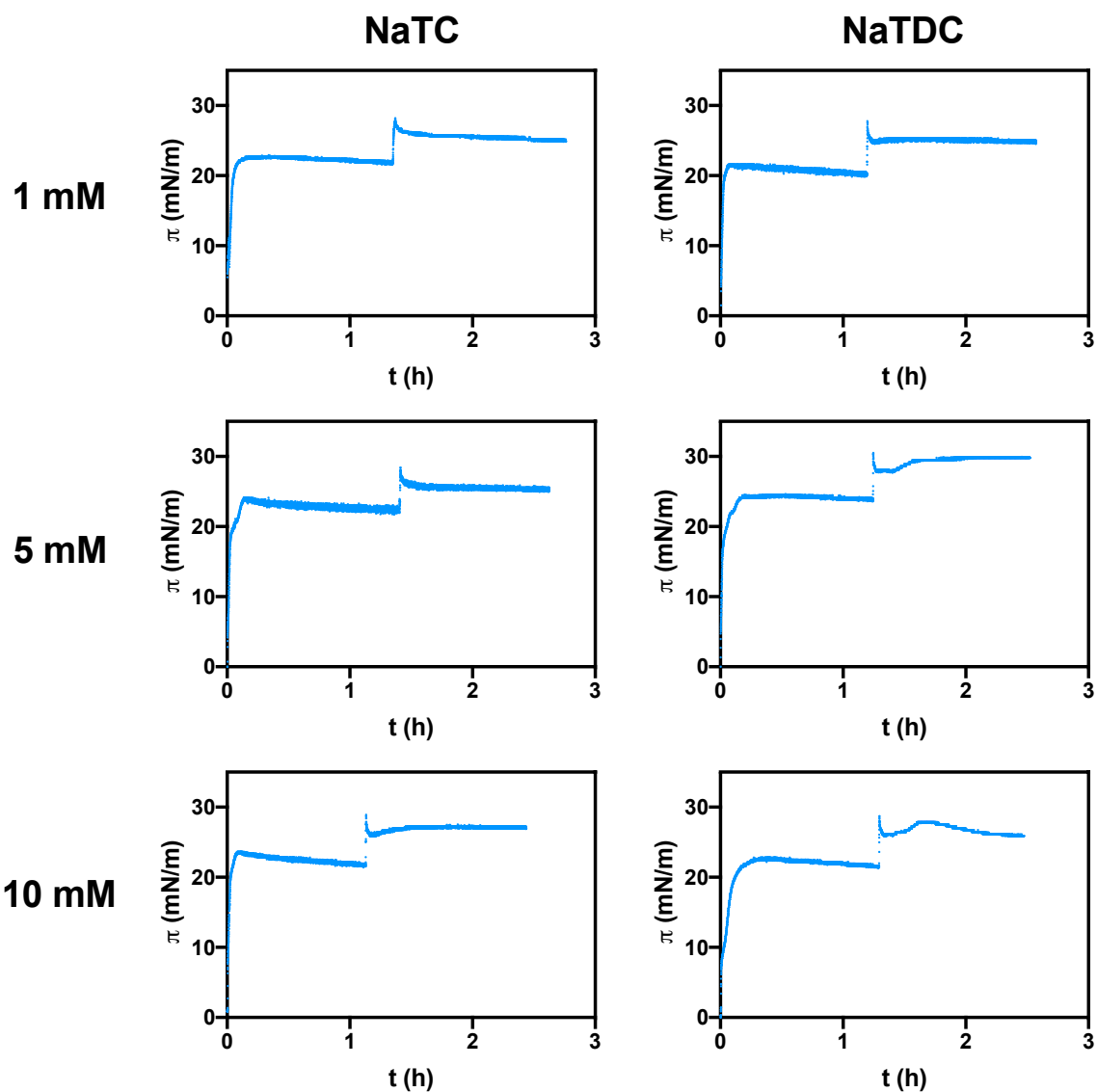
40  
 41 **Figure S3:** Time-dependent evolution of (A) the surface pressure ( $\pi$ ) measured in a Langmuir trough, and (B) phase shift  
 42 ( $\Delta\Delta(t) = \Delta(t) - \Delta_0$ ) measured by ellipsometry, upon successive injections of MC: (—)  $0.5 \times 10^{-2}\%$  w/w, (—)  $0.25 \times 10^{-1}\%$  w/w,  
 43 (—)  $0.5 \times 10^{-1}\%$  w/w, into the aqueous subphase (at  $23 \pm 2^\circ\text{C}$ ).



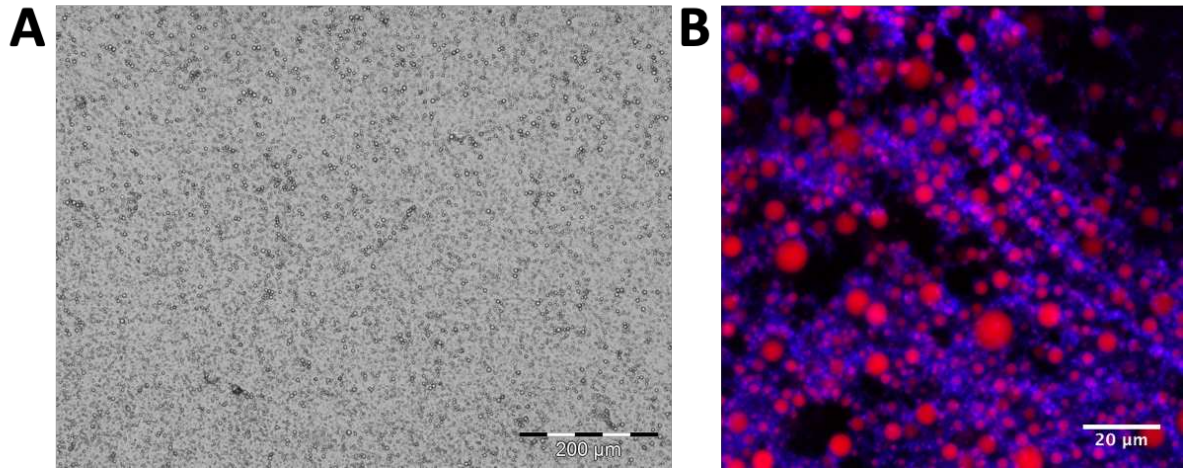
44  
 45 Figure S4: Time-dependent evolution of the surface pressure ( $\pi$ ) measured in a Langmuir trough, upon injection of MC into  
 46 the aqueous subphase, at varying concentrations: (—)  $0.5 \times 10^{-3}\%$  w/w, (—)  $0.5 \times 10^{-2}\%$  w/w, (—)  $0.5 \times 10^{-1}\%$  w/w, (—)  
 47  $0.5\%$  w/w (at  $23 \pm 2^\circ\text{C}$ ). Each experiment was reproduced twice, and the average measurement was selected for each BS  
 48 at each concentration.



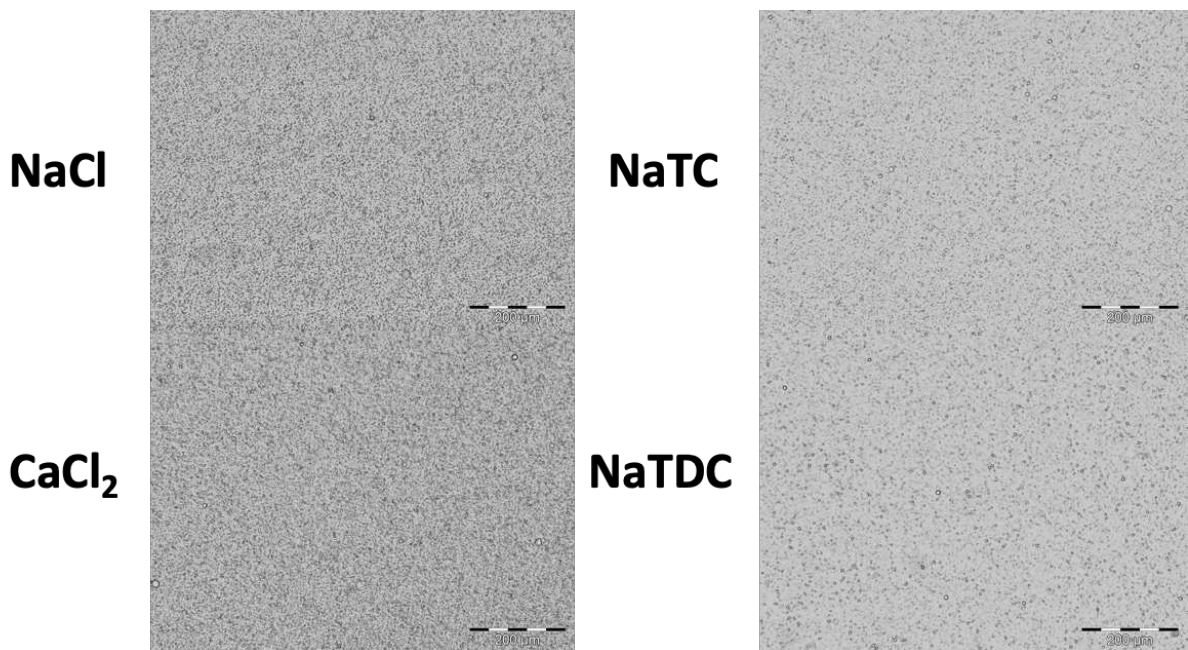
49  
 50 Figure S5: Time-dependent evolution of the surface pressure ( $\pi$ ) measured in a Langmuir trough, upon successive injections  
 51 of BS into the aqueous subphase: NaTC, NaTDC (at  $23 \pm 2^\circ\text{C}$ ). The first increase in surface pressure corresponds to the  
 52 adsorption of MC at the air/water interface, which was added into water at a concentration of  $0.5 \times 10^{-2}\%$  w/w ( $\pi_{\text{MC}} = 18$   
 53  $\pm 2$  mN/m). Each addition of BS is shown by an arrow, together with the corresponding BS concentration achieved in the  
 54 subphase. Each experiment was reproduced twice, and a representative measurement was selected for each experiment.



55  
 56 Figure S6: Time-dependent evolution of the surface pressure ( $\pi$ ) measured in a Langmuir trough, upon injection of varying  
 57 concentrations: 1, 5, 10 mM, of BS: NaTC, NaTDC, into the aqueous subphase (at  $23 \pm 2^\circ\text{C}$ ). The first increase in surface  
 58 pressure corresponds to the adsorption of MC at the air/water interface, which was added into water at a concentration  
 59 of 0.5‰ w/w ( $\pi_{\text{MC}} = 21 \pm 1 \text{ mN/m}$ ). Each experiment was reproduced at least twice, and a representative measurement  
 60 was selected for each BS at each concentration.

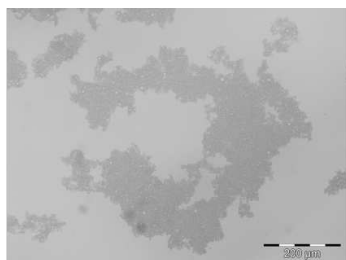


61  
 62 **Figure S7: Characterisation of MC-stabilised emulsion droplets microstructure by (A) optical (scale bar: 200 µm) and (B)**  
 63 **confocal (scale bar: 20 µm) microscopy. MC-stabilised emulsion was made up of 0.5% MC and 15% sunflower oil. The**  
 64 **confocal micrograph shows the lipid droplets (stained in red with Nile red) surrounded by MC (stained in blue with**  
 65 **calcofluor) present as a network in the bulk (B).**

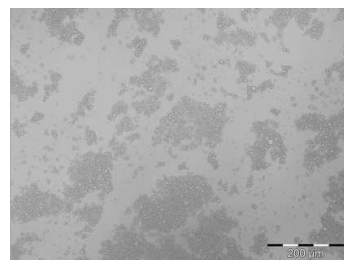


66  
 67 **Figure S8: Impact of the different digestive fluid components: NaCl, CaCl<sub>2</sub> and BS (NaTC, NaTDC) (used individually), on the**  
 68 **microstructure of MC-stabilised emulsion droplets, 60 min after mixing (at 37°C). MC-stabilised emulsion was made up of**  
 69 **0.5% MC and 15% sunflower oil. The scale bar is 200 µm.**

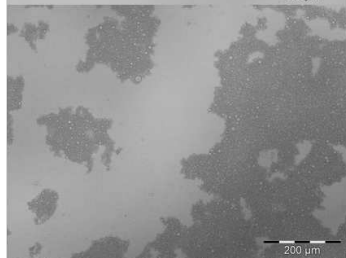
**NaTC + NaCl**



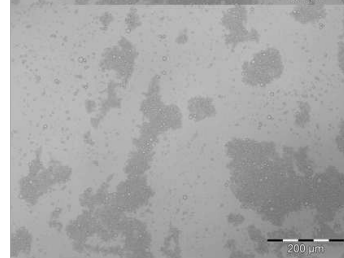
**NaTDC + NaCl**



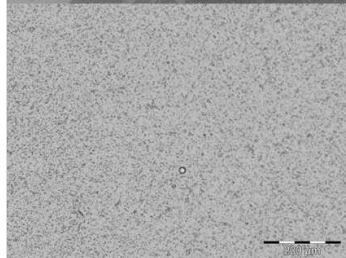
**NaTC + CaCl<sub>2</sub>**



**NaTDC + CaCl<sub>2</sub>**



**NaCl + CaCl<sub>2</sub>**



70  
71  
72  
73

**Figure S9: Impact of the different digestive fluid components: NaCl, CaCl<sub>2</sub> and BS (NaTC, NaTDC) (used in combination), on the microstructure of MC-stabilised emulsion droplets, 60 min after mixing (at 37°C). MC-stabilised emulsion was made up of 0.5% MC and 15% sunflower oil. The scale bar is 200 μm.**