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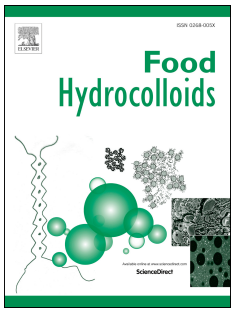

Reduction of surface fat formation on spray-dried milk powders through emulsion stabilization with λ-carrageenan

Martin Foerster, Chang Liu, Thomas Gengenbach, Meng Wai Woo, Cordelia Selomulya

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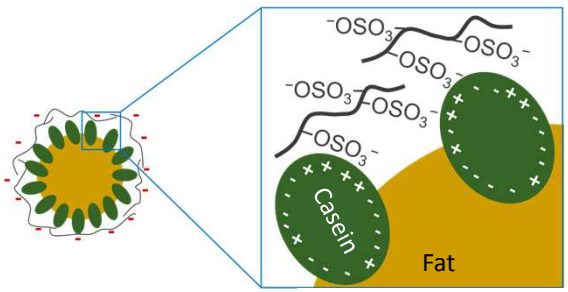
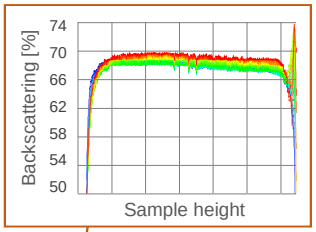
Formation of bilayer emulsions

- λ-carrageenan added to milk model emulsions at different concentrations
- The anionic polysaccharide can adsorb onto the fat globules' membranes
- Increase in negative charge of the globules, with the potential to stabilize the emulsions due to electrostatic repulsion

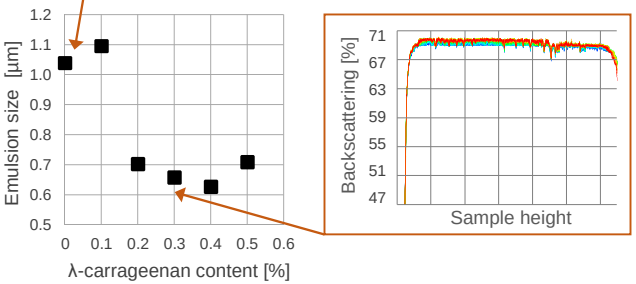


Emulsion analysis

- Emulsion stability
- Fat globule size
- Extensional and shear viscosity

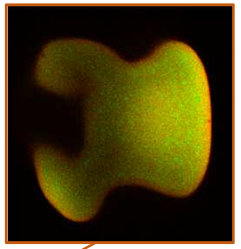


Increase in (extensional) viscosity and optimum emulsion stability at intermediate concentration



Spray-dried powder analysis

- Fat encapsulation: CLSM, XPS, fat extraction
- Porosity and surface morphology: SEM
- Functional properties: Solubility, oxidative stability



Reduced surface fat for the stabilized emulsions, decreasing porosity with more carrageenan