

Abstract Submitted  
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**Rheology of Aqueous Dispersions of Phytoglycogen Nanoparticles** HURMIZ SHAMANA, JOHN DUTCHER, Univ of Guelph — Phytoglycogen is a natural, highly branched polysaccharide nanoparticle extracted and purified from sweet corn. The nanoparticles possess many unusual properties that suggest a broad range of applications in cosmetics, food and nutrition, and biomedicine. These applications stem from a strong interaction between the nanoparticles and water, which has motivated our studies of aqueous phytoglycogen dispersions. We have measured the rheology of the dispersions as a function of phytoglycogen concentration  $C$ . Unlike other polysaccharides such as starch, we find that the zero-shear viscosity of phytoglycogen dispersions remains very low over an extended range of  $C$ , increasing significantly only for  $C > 20\%$  w/w. These results imply that the particles do not interact significantly until they are forced into contact at very high concentrations. This is consistent with our small angle neutron scattering measurements that show that the particle spacing becomes equal to the particle diameter for  $C \sim 25\%$  w/w [1]. [1] J.D. Nickels, J. Atkinson, E. Papp-Szabo, C. Stanley, S.O. Diallo, S. Perticaroli, B. Baylis, P. Mahon, G. Ehlers, J. Katsaras and J.R. Dutcher. *Biomacromolecules* 17, 735-743 (2016).

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