Fluid release from polysaccharide-based gels study

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Most of polysaccharide-based hydrogels spontaneously release fluid called syneresis1. This presentation will demonstrate how strain caused by the gels own weight play a part in the release amount ensuing that the compliance of these gels, under rheological testing, could induce syneresis in some extent. However, this is not sufficiently investigated in the literature. Most of the times only shrinkage is reported as the mechanism by which fluid is released2. The interaction between the strain and shrinkage in the release phenomenon will be addressed in this presentation. This topic is of high complexity when one wishes to rationalize the syneresis with the gel structure and elasticity2, 3. The polysaccharide and salt concentrations have been found to affect differently the syneresis kinetic particularly if the gels are submitted to mechanical stress4. These two ingredients were used to design product textures but also to control the taste and flavor stability in food industry.

*References:*

1 Mao, R.; Tang, J.; Swanson, B. G. *(*2001). Water holding capacity and microstructure of gellan gels. *Carbohydrate Polymers*, 46, 365-371.

2 Lucey, J. A.; van Vliet, T.; Grolle, K.; Geurts, T.; Walstra, P. *(*1997). Properties of acid casein gels made by acidification with GDL. 2. syneresis, permeability and microstructural properties. *International Dairy Journal*, 7, 389-397.

3 Ako, K. *(*2015). Influence of elasticity on the syneresis properties of kappa-carrageenan gels. *Carbohydrate Polymers*, 115, 408-414.

4 Ako, K. *(*2017). Yield study and release property of polysaccharide-based physical gels.*International Journal of Biological Macromolecules, Submitted*