**Influence of starch swelling volume and concentration on texture development of yogurts**

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Yogurt is traditionally produced from the lactic acid fermentation of milk, leading to a decrease in pH and induced gelation of casein micelles.  Gel firmness and other yogurt texture characteristics can be positively impacted by optimizing formulation through proper starch selection. During yogurt production, starch gelatinizes and swells during heat treatment, which moderately increases the viscosity prior to fermentation, sufficient to suspend milk solids prior to the development of the casein gel network. Swelling of starch granules also serves to increase the density of casein micelles per unit volume, thereby increasing the local concentration of casein, decreasing the pore size of the gel network, and increasing the gel strength of the yogurt. The objective of this work was to investigate the relationship between starch swelling volume and casein gel network formation giving rise to differences in yogurt gel strength and yogurt texture. In this investigation, yogurts were prepared with 3 starches with different swelling volumes and were compared at 3 different usage levels. Viscosity of the yogurts was analyzed over shear rates of 0.1 to 100 1/s with the Discovery HR-3 advanced rheometer (TA Instruments) using cup and bob geometry. Gel strength and yogurt viscoelastic characteristics (G’, G” and tan δ) were characterized over a strain sweep from 0.1 to 100% strain at a constant frequency of 1 Hz. Starches with high swelling volumes were found to be overcooked through yogurt processing, causing a loss of viscosity and overall weak yogurt gel strength. Starches with medium to low swelling volumes were able to build viscosity through processing, concentrate the casein gel network and increase yogurt gel strength. Low swelling starches were also found to provide improved shear-thinning and oral melt-away properties.