

Research Brings More Concerns About Modified Corn Starch Powders To Light

Has the evidence finally made these thickeners too risky?

Thickeners are used to manage the thickness level of beverages as they are consumed by people with specific swallowing problems. It has generally been assumed that the thickness of a beverage is not affected by feeding conditions. However, recent research on an enzyme present in all saliva (amylase) and its effect upon modified corn starch in water demonstrates that this assumption may be false, and could potentially lead to dramatic thinning of beverages—whether in the cup during feeding or during a swallow.

Researchers from the University College London¹ looked at the effects of salivary amylase on the viscosity of water thickened with modified corn starch. Two conditions were evaluated—a swallowing simulation (i.e. what happens when salivary amylase is mixed with a thickened bolus during a swallow) and a cross-contamination simulation (i.e. what happens when salivary amylase is introduced into a cup full of thickened water during patient feeding).

The results show **DRAMATIC REDUCTIONS IN VISCOSITY** of water thickened with modified corn starch. In the swallowing simulation, as shown in figure 1, there was a 90% reduction in viscosity in just 10 seconds. In the cross-contamination scenario, as shown in figure 2 the researchers found a 99.5% reduction in viscosity in 10 minutes.

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FIGURE 1: SWALLOWING SIMULATION

Water With Corn Starch Thickener

The effect on viscosity of adding 1 ml of saliva to a 10-ml bolus of thickened water. Normalized: 100% = viscosity prior to addition of saliva; 0% = viscosity of water.

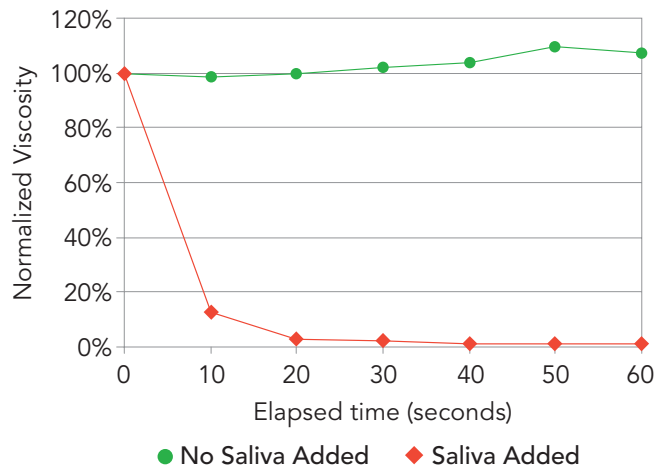
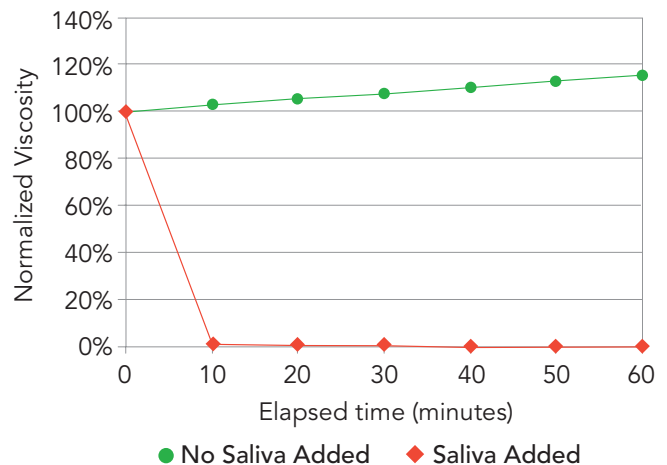


FIGURE 2: CROSS-CONTAMINATION SIMULATION

Water With Corn Starch Thickener

The effect on viscosity of adding 1 ml of saliva to a 200-ml cup of thickened water. Normalized: 100% = viscosity prior to addition of saliva; 0% = viscosity of water.



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The research concludes “that in clinical practice it is likely that the viscosity of swallowed boluses is not equal to the viscosity of the drink in the cup because of saliva.”

“We have further shown that contamination of just 1 ml of saliva to 200 ml of thickened water can counteract the thickening effect, decreasing its viscosity almost back (to) that of plain water. We would therefore recommend that the utmost care be taken to avoid contamination by saliva and that any contaminated drink be discarded. Attempts to rethicken by the addition of more thickener will be ineffective.”

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Hanson, Ben, Mark T. O’Leary, and Christina H. Smith. “The effect of saliva on the viscosity of thickened drinks.” *Dysphagia* 27.1 (2012): 10-19.

² Petit, David J. “Biogums Used in Food and Made by Fermentation.” *Biotechnology and Food Ingredients* Edited by Israel Goldberg, Richard Williams. By J. K. Baird. New York: AVI, 1991. 237. Print.

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