Use of Dehydrated Pork Stock as a Group 2 Protein in Hot Dogs

G. Prabhu¹, R. Husak¹*, and K. Steffen²

¹PHD Technologies LLC, Ames, IA, USA; ²Scanflavour AS, Moldrup, Denmark

Keywords: dehydrated pork stock, natural, functional Group 2 protein, non-binder

Materials and Methods

Three treatments of pork and beef hot dogs were formulated: Control (fat plus added water = 35), Trt. 2: 1.07% dehydrated pork stock + 3.5% additional water (fat + added water = 35), Trt. 3: 1.07% dehydrated pork stock + 8.03% additional water (fat + added water = 40). Pork 72 trim, salt, sodium phosphate, sodium erythorbate and sodium nitrite and half the water/ice was chopped in a bowl chopper to a temperature of 11°C. The Pork 42 trim and Beef 50 trim, rest of the dry ingredients and the remaining water was added to the bowl chopper and chopped until the temperature reached 18°C. The emulsion was stuffed into a 22 mm diameter cellulose casing and cooked in a smokehouse to an internal temperature of 71.6°C. The hot dogs were chilled following USDA Appendix B guidelines, peeled, vacuum packaged and stored in a cooler at 4°C.

Hot dogs were evaluated for cook yield by difference in weight before cooking/chilling. Texture profile analysis (TPA) was done using a Texture Analyzer equipped with a 1-cm stainless steel cylindrical probe set to 30% compression of 2.54-cm height of the product. The TPA was measured on hot dogs that were heated for 15 min on a Model 12 Star Roller Grill set on medium heat. Interior color was measured using a handheld Hunterlab color reflectance meter set to a D65 light source. Freeze-thaw purge was measured by difference in weight of the hot dogs after one freeze–thaw cycle. The study was replicated three times and statistical analysis was performed using ANOVA (P < 0.05) with StatView for Windows on 3 replications.

Results

Cook yields were significantly (P < 0.05) higher for Trt. 2 compared to the control. The hardness, gumminess and chewiness values were significantly (P < 0.05) higher for Trt. 2, but not significantly (P > 0.05) different for Trt. 3 compared to the control. Hunterlab interior color (L, a and b values) were not significantly (P > 0.05) different for any of the treatments. Freeze-thaw purge was significantly (P < 0.05) lower for both test treatments compared to the control.

Conclusion

Dehydrated pork stock is a cost-effective, functional, allergen-free Group 2 protein which can be used in hot dogs to increase cook yields, reduce purge and improve texture while providing significant cost savings. This ingredient is not considered a “binder” by USDA hence meat processors are able to make “no binder no filler” claims.