



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

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Objectives

Protein ingredients are primarily used in meat products to decrease formulation costs, improve product texture, increase cook yield or enhance product flavor. In 2010, dehydrated pork stock was approved by the USDA in comminuted and whole muscle meat products such as, sausages, meatballs, meatloaf, meat patties and hams. Dehydrated pork stock is an allergen-free, functional ingredient which can replace some or all of the traditional binders and allergens in meat products. Dehydrated pork stock can be used to replace lean meat to provide cost savings. The collagen enriched dehydrated pork stock contains over 90% protein which can be used to contribute 1% Group 2 protein in cooked sausages to maximize the added water. The objective of this study was to evaluate quality characteristics of hot dogs by utilizing dehydrated pork stock to maximize Group 2 protein to maximize the added water.

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 11C. 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 18C. The emulsion was stuffed into a 22 mm diameter cellulose casing and cooked in a smokehouse to an internal temperature of 71.6C. The hot

dogs were chilled following USDA Appendix B guidelines, peeled, vacuum packaged and stored in a cooler at 4C.

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.