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Use of Dehydrated Pork Stock in Low Cost Bologna

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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, a functional protein known as dehydrated pork stock (DPS) was approved by USDA in comminuted and whole muscle meat products such as sausages, meatballs, meatloaf, meat patties and hams. DPS is an allergen-free, functional ingredient which can replace some or all of the traditional binders and allergens in meat products. It contains over 90% protein and can be used to replace meat to provide cost savings. DPS is not considered a “binder” by USDA hence meat processors are able to make “no binder no filler” claims.

The objective of this study was to evaluate quality characteristics of low cost bologna by utilizing DPS to replace meat.

Materials and Methods

Three treatments of bologna were formulated as shown in the table below.

Mechanically separated turkey, salt, sodium phosphate, sodium erythorbate and sodium nitrite and half the water/ice was chopped in a bowl chopper to a temperature of 6C. Pork 20s trim and the rest of the dry ingredients and the remaining water were added to the bowl chopper and chopped until the temperature reached 12C. The emulsion was stuffed into a 12 cm diameter fibrous casing and cooked in a smokehouse to an internal temperature of 71.6C. The bologna was chilled following USDA Appendix B guidelines, sliced, vacuum packaged and stored in a cooler at 4C.

Bologna was evaluated for cook yield by difference in weight before cooking/chilling. Firmness was measured on 2.54-cm thick bologna slices using a Texture Analyzer equipped with a 1-cm stainless steel cylindrical probe set to 30% compression and 2mm/s test speed. Interior color was measured using a handheld Hunterlab color reflectance meter set to a D65 light source. Sliceability was measured by the number of intact slices (out of 30) when the bologna was sliced to 1.5 mm thickness using a Bizerba table top automatic slicer set to full speed, 2/3 stroke. Purge was measured over 8 wk of refrigerated storage on sliced vacuum packaged bologna by measuring the amount of free liquid in the package. Statistical analysis was performed using ANOVA ($P < 0.05$) with StatView for Windows on 3 replications.

Results

Cook yields were not significantly ($P > 0.05$) different for Trt. 2 and Trt. 3 compared to control. Firmness values were significantly ($P < 0.05$) higher for Trt. 2, but not significantly ($P > 0.05$) different for Trt. 3 compared to control. Hunterlab interior color (L, a and b) values were not significantly ($P > 0.05$) different for any of the treatments. Sliceability was significantly ($P < 0.05$) improved for both test treatments compared to control. Purge was significantly ($P < 0.05$) lower for both test treatments compared to control over 8 wk of refrigerated storage.

Conclusion

DPS is a cost-effective, functional, allergen-free protein ingredient which can be used in bologna to increase cook yields, improve texture, sliceability and

reduce purge while providing significant cost savings. DPS can be used in modification of current and development of next generation meat products.

	TRT. 1	TRT. 2	TRT. 3
Pork 20s	22.23	14.23	15.23
Mechanically Separated Turkey	60.00	60.00	60.00
Water	8.10	15.10	14.10
Salt	1.49	1.49	1.49
DPS 941	0.00	1.00	0.00
DPS 941/DPS 1075	0.00	0.00	1.00
Corn Syrup	5.25	5.25	5.25
Potassium Lactate/Sodium Diacetate	1.04	1.04	1.04
Sodium Nitrite	0.01	0.01	0.01
Spice with Sodium Phosphate	1.88	1.88	1.88
Total	100.00	100.00	100.0