



WHERE GLOBAL PET FOOD MEETS

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## **Utilization of dried bakery products as an ingredient in extruded pet food**

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### **Abstract details:**

Utilizing upcycled materials such as dried bakery products (DBP) in pet food formulations presents an opportunity to improve sustainability in the pet food industry. The DBP is a human food by-product defined as a mixture of bread, cookies, cake, crackers, flours and doughs which has been mechanically separated from non-edible material, artificially dried and ground. Due to the range of materials that go into DBP, its composition can vary depending on the location and practices of the manufacturer.

This study aimed to evaluate variability among production facilities and the use of DBP in extruded pet foods.

Six different manufacturing facilities supplied DBP from six different production dates. Raw materials were analyzed for nutritional composition, total starch content, functionality and swelling properties using rapid viscoanalyzer. A mixture containing 25% DPB from each location plus 75% of a pet food mixture (48% ground corn, 29% poultry by-product meal, 12% corn gluten meal, 10% rice, 1% vitamins and minerals), and a control treatment containing the mixture only, were extruded using a lab-scale twin screw extruder with screw diameter of 18mm (Micro-18, American Leistritz, Somerville, New Jersey). Statistical analysis was conducted in R software using *nlme* package, and a P-value < 0.05 was considered significant. Treatment means were tested using Tukey's adjustment in *emmeans* package. Moisture, protein, fat, total dietary fiber and nitrogen free extract were different across the six different locations (P < 0.05). Ash and total starch did not differ by location (P > 0.05). For the extruded products, specific mechanical energy was 161.3 kJ/kg for Control, 129.0 kJ/kg for California-1, 112.9 kJ/kg for California-2, 112.9 kJ/kg for Texas, 80.6 kJ/kg for Georgia, 64.5 kJ/kg for Kansas and 48.4 kJ/kg for Maryland. Moreover, expansion of the products reflected the specific mechanical energy results. Kansas facility resulted in the lowest expansion, whereas it increased for the Maryland and was greatest for the Texas product. The Control and locations California-1, California-2 and Georgia were similar in expansion to Texas and Maryland (P > 0.05) plants.

Extruding pet food with DBP as an ingredient was feasible, but different manufacturing locations affected ingredient composition and product expansion.

### **Biography:**



Larissa Alves Koulicoff is a Ph.D. student in the Pet Food Program at Kansas State University. She received a veterinary medicine degree from the University of Sao Paulo in Brazil, and her Master of Science degree in animal science from Kansas State University. In 2023, she started her Ph.D. and is currently evaluating dried bakery products as an alternative ingredient in pet food.