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Situational analysis for use of sorghum in North American pet food

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Abstract details:

Sorghum has many advantageous qualities such as the ability to tolerate drought conditions and high contents of polyphenol antioxidants. However, the use and growth of sorghum is limited in the pet food industry. The question is why?

The objective of our systematic review was to determine what information was available regarding sorghum's use in pet food and summarize it in the framework of a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, the intent of which was to determine gaps in our knowledge.

Four reliable scientific databases were used to facilitate the literature search. Boolean search terms chosen were "sorghum," "dogs," "canine," "cats," "felines," "feed" and "food." After excluding unrelated articles, there were 38 applicable original peer-reviewed research manuscripts. All articles were read in depth and summarized. Across the articles, 17 manuscripts gave nutritional composition of sorghum or sorghum co-products. From the 17 articles, six were from Brazil and 11 were from the United States. Sorghum contained an average of 11% crude protein, 4% crude fat, 10% total dietary fiber and less than 2% ash on a dry matter basis. In twenty-three sorghum-based diets (20 in dogs, 3 in cats) digestibility of fat averaged 89%, gross energy ranged from 70-90% and protein averaged 82%, which contradicts previous negative connotations. Eighteen of the sorghum-based diets fed during digestibility trials also reported fecal scores averaging 3.6 on a 5-point scale: Near ideal. Palatability (dogs) was similar to wheat and rice predominated diets. For postprandial glucose and insulin levels, conflicting results were observed among studies; wherein, some studies saw a decreased or no glycemic response compared to other grains like rice.

For strengths, sorghum fits the category of an ancient grain, is gluten free, non-genetically modified, sustainable and contains polyphenolic antioxidant compounds. Weaknesses include a lack of information on antioxidant capacity, gut health and caloric impact with only one or two studies providing information on each. Sorghum lacks awareness as a grain overall. Opportunities include its antioxidant potential, impact on weight loss, *in vitro* fermentation, gut health and glycemic control. The major threat for sorghum is the lingering negative connotations, such as low protein digestibility and bitter taste perceptions that carryover from old literature.

New studies could change consumer and producer minds by presenting scientific-based evidence that supports the utilization of sorghum and its positive attributes as an ingredient in diets for dogs and cats.



Biography:

Katelyn Bailey is a master's student under Dr. Greg Aldrich and Dr. Julia Guazzelli Pezzali in the Pet Food Program at Kansas State University. Katelyn earned a Bachelor of Science in Animal Science and a minor in Food Technology from Iowa State University. Katelyn's research focuses on the use of sorghum in extruded and raw pet foods, and its impact on digestibility, antioxidant capacity and overall health of dogs and cats.