



# Sensory characterization of dry dog food with different fiber composition

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## Introduction

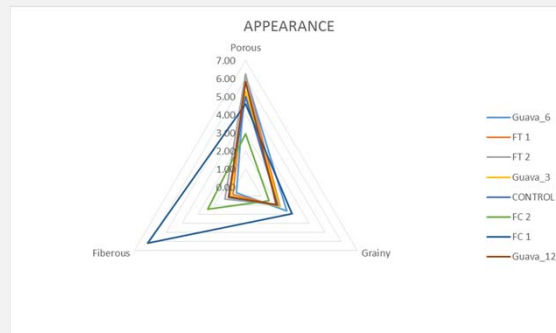
- Sensory properties of pet food products may be influenced by type of ingredients used in the formula, added palatants, and processing factors used.
- Different sources of protein, grains, and fibers can influence the flavor and texture of extruded dog food.
- To understand the sensory characteristics of samples manufactured with different fibers composition, eight extruded products were evaluated in this study.

## Materials and Methods

- A basal diet containing maize and poultry by-product meal was formulated for adult dog maintenance (FEDIAF, 2011). Fiber was added to this basal diet to create eight treatments: Control, with no fiber addition; fruit (guava) fiber, at the inclusion levels of 3%, 6%, and 12% (Guava3, Guava6, Guava12); sugarcane fiber with two different particle size (FC1, FC2); and wheat bran fiber with two different particle size (FT1, FT2). All fibers were added replacing maize. Diets were extruded in a single screw extruder, and each food processed in 2 separate days.
- Descriptive sensory analysis was performed by a highly trained sensory panel. Two orientation sessions were held prior the testing to define the necessary attributes and reference materials. Panelists individually evaluated each sample three times. Intensity scores were based on a 0 – 15 point scale with 0.5 increments. Total of 54 terms were used (4 appearance, 13 aroma, 18 flavor, 13 aftertaste, and 6 texture). Samples were served in 3.25oz plastic cups for flavor, aftertaste, and texture evaluation. For aroma evaluation 3g of sample was weighted in medium (180ml) glass sniffers.

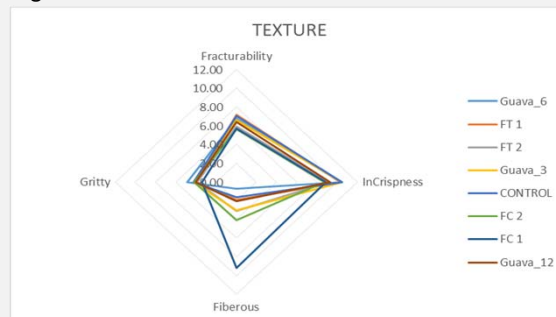
## Results and Discussion

- Appearance attributes Porous, Grainy, and Fibrous (Figure 1) were significantly different among the samples set ( $p < 0.05$ ).
- Sugar Cane large particle size (FC1) had the highest Fibrous and Grainy appearance level while Sugar Cane small particle size was had the lowest level for Grainy and Porous attributes.



**Figure 1.** Graphic showing samples scores significantly different attributes ( $p < 0.05$ ) appearance attributes

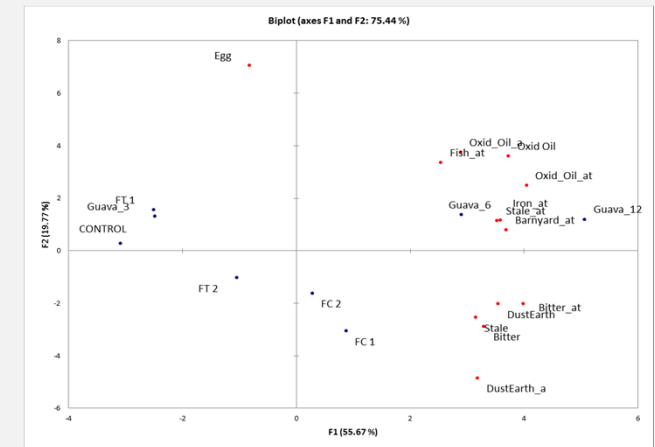
- Fracturability, Initial crispness, Fibrous, and Gritty attributes differentiated the samples in texture (Figure 2).
- Sugar Cane large particle size sample (FC1) showed the highest score for fibrousness.



**Figure 2.** Graphic showing samples scores significantly different attributes ( $p < 0.05$ ) texture attributes

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- Guava 6% and Guava 12% showed the highest Oxidized Oil aroma, and aftertaste levels.
- Guava 12% and Sugar Cane small particle size (FC2) were the most bitter samples while Guava 3% was the least bitter sample.
- Guava 12% had the highest bitter, stale, barnyard, iron, oxidized oil, and fish aftertaste.



**Figure 3.** Principal Component Analysis showing aroma, flavor, and aftertaste significantly different ( $p < 0.05$ ) attributes

## Conclusions

- The study results showed that fiber source as well as fiber amount of fiber influence the sensory properties of extruded dog food.
- For aroma and flavor the differences were overall not too large across the samples with Guava 12% showed the highest scores for most of the aftertastes (including off-notes) and the highest bitterness (together with FC1).
- Sugar Cane fibers with large particle size seemed to influence fibrous texture more than any other type of fibers. This was also reflected in appearance.
- Sugar Cane with small particle size showed the lowest scores across the sample set for all of the significant appearance attributes (porous, fibrous, grainy) and overall Sugar cane samples showed the lowest fracturability and initial crispness (texture) levels.