USING SENSORY METHODS TO EXAMINE DIFFERENCES IN COOKING METHODS FOR PORRIDGE PRODUCTS USED IN UNITED STATES INTERNATIONAL FOOD ASSISTANCE PROGRAMS.

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INTRODUCTION

➢ In U.S. food assistance programs, novel fortified food blends(FBFs) are being developed using U.S. sorghum and soybeans. These novel products have an advantage over the current FBFs in that they:

1) Require much less energy for preparation.
2) Enhance the use of U.S. sorghum and soybeans for value-added food applications.
3) Reduce many African countries' dependence on corn which is less drought resistant.

➢ However, changes in product composition also affect sensory properties of final porridge products.

➢ In a previous study of porridges, texture attributes were found to be key factors in consumer acceptability.

➢ Anecdotal evidence indicates that even small variations in preparation result in large differences in sensory properties, affecting consumer acceptability.

➢ Different preparation methods and their effect on sensory properties of the final porridge were investigated. Products evaluated include a Corn-Soy-Blend(CSB) and a Sorghum-Soy-Blend(SSB).

MATERIALS AND METHODS

Descriptive sensory analysis was performed to understand product differences when using three different cooking methods for the porridges. Data was analyzed by one-way ANOVA to determine significance between the samples for each method, followed by pair-wise comparisons for each method based on SAS least square (LS) means.

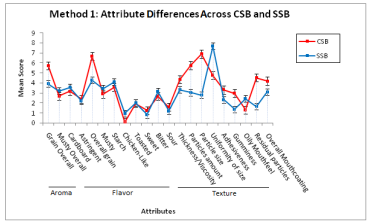
	Step 1	Step 2	Step 3	Step 4
Method 1 (Oil prior cooking)	2000 ml water was brought to a boil.	**235g SSB/CSB was added to 63.3 g oil.**	Grain + Oil mixture added to the water and brought to a boil, while being continuously stirred.	When the sample reached 179°F (CSB) or 175°F (SSB), it was removed from heat and stirred for 30 s to avoid burning.
Method 2 (Oil during cooking)	2000 ml water was brought to a boil.	63.3 g oil was added to boiling water	**235g SSB/CSB was then added to the water-oil mixture and brought to a boil, while being continuously stirred**	When the sample reached 179°F (CSB) or 175°F (SSB), it was removed from heat and stirred for 30 s to avoid burning.
Method 3 (Oil after cooking)	2000 ml water was brought to a boil	235g SSB/CSB was then added to the water and stirred	When the sample reached 179°F (CSB) or 175°F (SSB), it was removed from heat and stirred for 30 s to avoid burning.	**63.3 g oil was added to water+ grain mixture and brought to a boil, while being continuously stirred.**

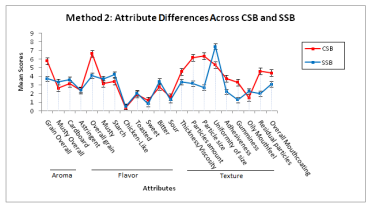
RESULTS

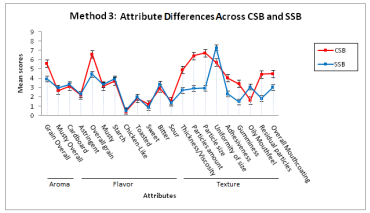
Significantly Different Attributes Across SSB and CSB

Aroma	Method 1 (Oil Prior)	Method 2 (Oil During)	Method 3 (Oil After)
Grain Overall	**<.0001***	**<.0001***	**<.0001***
Musty Overall	0.1631	**0.0290***	0.3494
Flavor			
Overall grain	**<.0001***	**<.0001***	**<.0001***
Chicken-Like	**0.0002***	0.4861	0.5666
Sweet	**0.0058***	**0.0070***	**0.0177***
Bitter	**0.0306***	**0.0030***	0.0605
Sour	**0.0404***	0.0976	0.3493
Texture			
Thickness/Viscosity	0.0732	**0.0464***	**0.0001***
Particles amount	**0.0064***	**0.0016***	**0.0005***
Particle size	**<.0001***	**<.0001***	**<.0001***
Uniformity of size	**0.0204***	0.0539	0.1926
Adhesiveness	**0.0303***	**0.0044***	**0.0039***
Gumminess	**0.0006***	**<.0001***	**<.0001***
Oily Mouthfeel	**0.0006***	**0.0440***	**0.0011***
Residual particles	**<.0001***	**0.0001***	**<.0001***
Overall Mouthcoating	**0.0075***	**0.0006***	**<.0001***

Attribute Differences Across CSB and SSB for Each Method







CONCLUSIONS

➢ Results indicate many significant differences between products for each cooking method. A greater number of texture attributes were affected.

➢ As novel porridge products are developed, it is crucial to consider that existing cooking methods may not achieve the desired texture profile, highlighting the importance of **product-specific cooking methods** to retain the critical quality attributes of porridges.

➢ Without consideration of cooking methods, final porridge products may exhibit different sensory properties from what was initially developed and intended.

➢ Consumer acceptability tests with product-users held in the targeted communities may be able to target specific quality attributes of importance for the current FBF versus the novel FBF, aiding cooking method development.

➢ Simultaneous development of proposed FBFs and accompanying cooking methods are crucial to the acceptance of these new products, and hence the success of supplemental feeding programs.

REFERENCES

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