Consumers' willingness to pay for genetically biofortified foods: Evidence from Nigeria

Agricultural Economics, Bioeconomy and Sustainable Food Systems
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How will consumers react to the use of genetic engineering methods in biofortification?

- Genetic biofortification of staple foods can mitigate the persistent challenge of hidden-hunger in Sub-Saharan Africa (SSA).
- Yet, there is no robust evidence for consumer's acceptance/rejection of genetically engineered food in this region.
- Moreover, most of the consumers largely lack the knowledge of genetic engineering methods.

Research Questions

- Without information, are consumers willing to pay for genetically biofortified foods?
- What are the effects of different information on consumers' WTP for genetically biofortified foods?

Methods

- Study carried out in Nigeria.
- Food product: Cassava flakes (gari).
- 352 consumers.
- Data from cross-sectional and discrete choice experiment.
- Balanced test for randomization.
- Data fitted to random parameter logit models.

Experimental Design

Respondents randomized into:

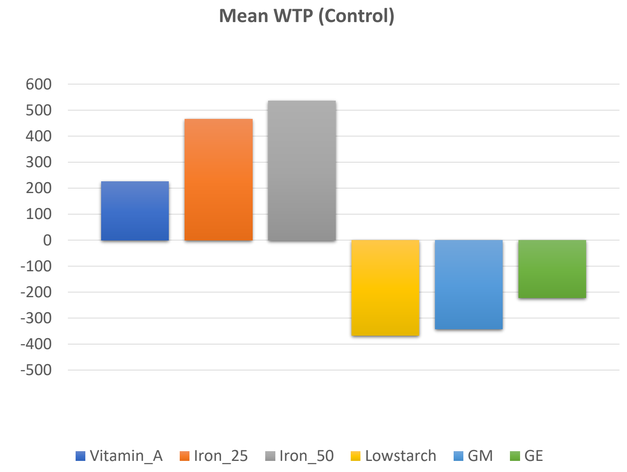
- **Control**: No information.
- **T1**: Information on health risks of micronutrient deficiencies and benefits of biofortification.
- **T2**: T1 + Information on breeding methods (Conventional, Transgenic (GM) and Gene Editing (GE)).

Discrete Choice Experiment

Variables	Description	Levels	Reference
Vitamin A (VA)	Percentage of body requirement for VA	60, 100	60
Iron	Percentage of body requirement for iron	0, 25,50	0
Starch Content	Cassava starch content	Low, High	High
Plant Breeding Method	Cassava breeding method	Conventional GM, GE	Conventional
Price (NGN)	Price per 1kg of Gari	300, 500,700	300

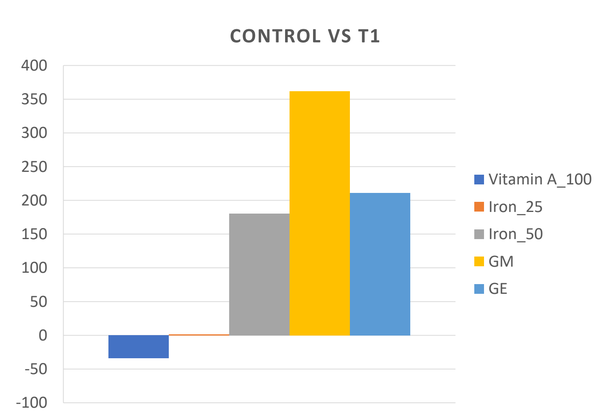
	Gari 1	Gari 2	Gari 3 (Status quo)
			
Vitamin A	Contains 60% of the average Vitamin A required by the body.	Contains 60% of the average Vitamin A required by the body.	Does not contain Vitamin A required by the body.
Iron	Does not contain Iron required by the body	Contains 25% of the average Iron required by the body.	Does not contain Iron required by the body
Starch Content	Contains High Starch	Contains High Starch	Contains High Starch
Plant Breeding Method	Conventional Method	Gene-Editing Method	None
Price per Kg	₦ 300	₦ 500	₦ 300
I will buy	( )	( )	( )

Results (Consumers WTP)

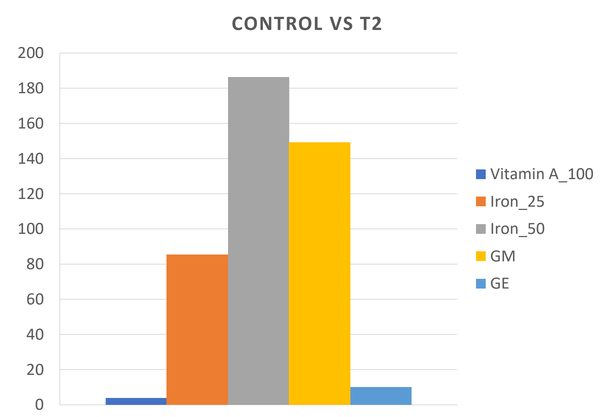


- Consumers are willing to pay premium for the nutrients attributes.
- Consumers discounted the GM and GE methods.

Comparing Treatment Groups to Control (Treatment Effects)



T1 reduces discount for GM and GE **significantly**.



T2 reduces discount for GM and GE **but not significantly**.

Conclusion

- Without information, consumers discounted genetically biofortified foods.
- Only information on health risks alone reduces the disutility for GM and GE significantly.
- With or without information, use of GM and GE may not significantly affect consumers' acceptance of genetically biofortified food in Nigeria and similar contexts.

Selected References

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