

UNLOCKING THE NUTRITIVE VALUE OF WHOLE GRAINS TO BEAT HIDDEN HUNGER IN EAST AFRICA

SIANI, Inclusive Business Sweden, BioInnovate Africa, Hidden in Grains



A sorghum farm in Tanzania. Photo: ICRISAT HORE / Flickr.

SUMMARY

This policy brief describes a traditional technique known as ‘hydrothermal technology’ for processing whole grains that can improve market opportunities for food companies. The hydrothermal process can be optimised to enhance vital micronutrients for human consumption hence lowering the risks of hidden hunger. The policy brief suggests policy implications that are likely to emerge if nutritious food practices are adopted by food companies in eastern Africa. The brief emanates from a SIANI-funded ‘[Expert group](#)’ project on hidden hunger implemented jointly by [Inclusive Business Sweden](#), [Hidden in Grains](#), and [BioInnovate Africa](#) in collaboration with [Stawi Foods and Fruits](#) between January 2020 and August 2021. The group equipped food companies with practical and proven knowledge on how bringing back the use and proper handling of whole locally grown traditional grains and hydrothermal processing can be the leading method for reducing phytate to increase absorbability of micronutrients to combat hidden hunger.

INTRODUCTION

Globally, more than two billion people are affected by hidden hunger. Hidden hunger is a chronic deficiency of micronutrients in form of minerals and vitamins caused by poor and unvaried diets. According to the 2020 provisional [global hunger index](#), Ethiopia, Kenya, Rwanda, and Tanzania are ranked between 20% and 35% in terms of hunger severity. Diets in Eastern Africa, just like in the rest of the world, lack variety and mainly consist of refined maize, wheat and rice which are affordable and fast to cook. Occasionally, especially in rural areas, diets include lower quantities of richer and less processed traditional grains, like millet, teff or sorghum.

Many of the low-nutrient processed foods that are available in the market are paradoxically made from locally available grains, most of which are naturally very nutritious. It is important to highlight that even though all types of whole grains are nutrient-rich, traditional varieties are naturally richer than modern varieties of rice or wheat that are the product of selective breeding where macronutrients like proteins have been prioritized.

Before highly processed food entered the market, whole grains, previously served as an important source of carbohydrates, protein, vitamins, and minerals. On the other hand, whole grains contain phytate, an anti-nutrient that can bind calcium, zinc, iron, and other minerals, hence inhibiting their bioavailability[1]. Therefore, reduction of phytate can potentially unlock the required nutrients in whole grains leading to better nutrients and diets.

Interestingly, these same anti-nutrient properties can also help in the prevention of chronic diseases like cardiovascular disease, diabetes, and cancer especially colon cancer which are associated with higher fat and lower fiber-rich food intakes common in so-called "western" diets. In spite of its potential drawbacks, some scholars suggest that it is the phytic acid in whole grains and beans that lends them their apparent protective medicinal effects[2].

This brief suggests that, in regions where hidden hunger exists, it is better to lower the levels of phytates in processed whole grains together with promoting a diverse diet.



Farmer Abera Degefa hand bundling his wheat variety Ogoicho, from Kalumso RC Photo: ICIMMYT/P. Lowe / Flickr

[1] Bioavailability in this case refers to nutrients that are available for absorption by the human body

[2] Ibrahim Abdulwaliyu, Shefiat Olayemi Arekemase, Judy Atabat Adudu, Musa Latayo Batari, Mercy Nwakamaswor Egbule, Stanley Irobekhan Reuben Okoduwa. Investigation of the medicinal significance of phytic acid as an indispensable anti-nutrient in diseases. Clinical Nutrition Experimental, Volume 28, 2019, Pages 42-61, ISSN 2352-9393.

MARKET OPPORTUNITY FOR FOOD COMPANIES

There is evidently high demand for nutritious, healthy, and safe staple food products in East Africa. For example, 94% of consumers in Uganda and Kenya would pay a premium for more nutritious porridge flour. In Uganda, where porridge has a big role in the diet, about 64% of people would pay at least 50% more for better flour. In addition, people who already ate a more nutritious porridge flour - containing millet and other ingredients besides maize - are more open to a premium price[3].

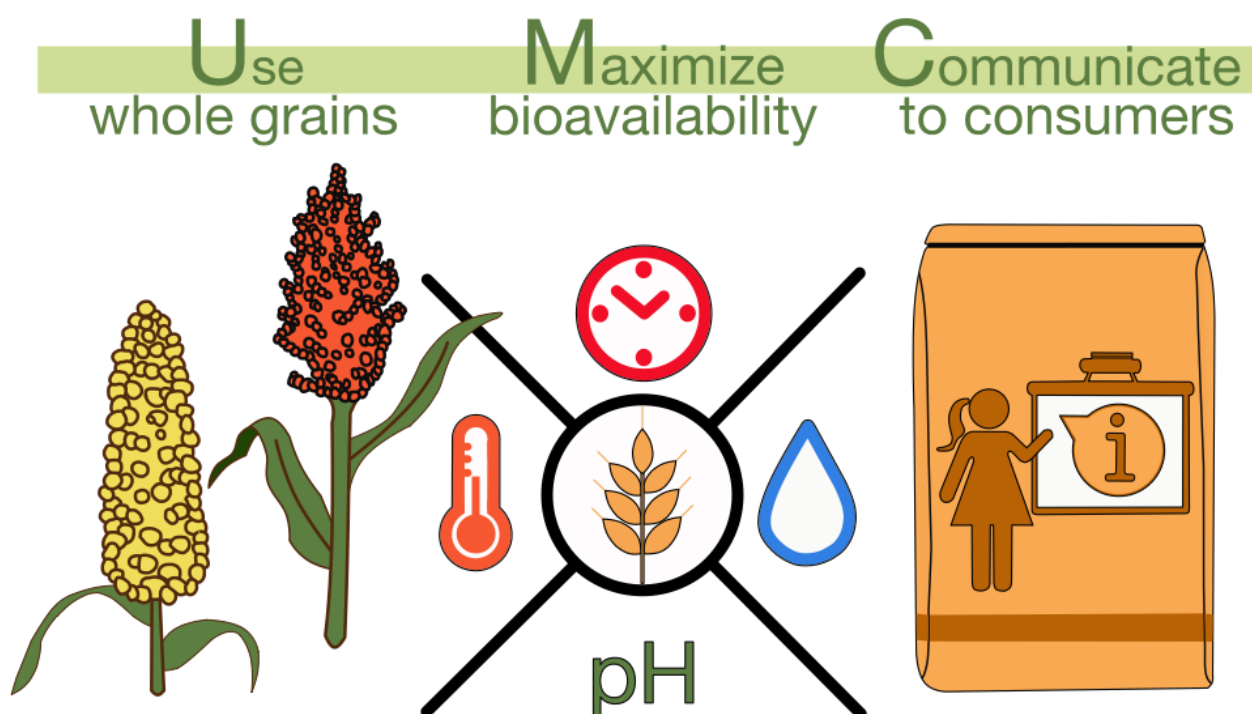
Policy actors could consider providing conducive environments for the private sector in adopting a three-pronged approach for nutritious grain processing:

1. Whole grains could be used as raw materials as opposed to heavily refined grains.

It is especially recommended to use locally available traditional varieties such as sorghum, millet, or tef, that are also more nutrient-dense and more resilient to changes in the climate compared to modern varieties.

2. Adopt hydrothermal processing of whole grains. By using this simple technique either as part of their current processing activities or as a stand-alone, food companies can potentially create products that reach the iron absorption of red meat and increase zinc absorption by up to 400%, and which are tasty and affordable.

3. Focus on informing consumers about the nutritious nature of the product or the health and environmental benefits of consuming the product. Inform beyond the minimal requirement. In addition, the taste dimension of the product should be emphasized to trigger an affection response.



POLICY IMPLICATIONS

If food companies integrate hydrothermal processing practices, they could rapidly meet an untapped market opportunity since demand for healthy value-added food products already exists in the region. As such, the following are the likely policy implications:

- The need for continued efforts by the East Africa Community to harmonize standards for nutritious food involving production and processing along food value chains in eastern Africa.
- Promote targeted advocacy programs that promote nutritious food among rural and low-income consumers who are more vulnerable to challenges related to hidden hunger.
- The need for breeding programmes in the region to preserve the high nutritional attributes of local/traditional varieties.
- The need for more research on food processing methods that preserve micronutrients and increase their bioavailability in human diets.

CONCLUSIONS

The hydrothermal technique presents a myriad of opportunities for the private sector to produce nutritious food for the health and wellbeing of consumers. Adoption and integration of the technique in food processing in communities with hidden hunger in eastern Africa require a collaborative effort involving policy actors to set standards for nutritious food, academia as generators of knowledge, and the private sector to use the knowledge and create innovative solutions to combat hidden hunger.

ADDITIONAL READING

- <https://www.siani.se/expert-groups/hidden-in-grains/>
- <https://bioeconomy.easteco.org/wp-content/uploads/2020/10/Executive-Summary-of-the-EAC-Regional-Bioeconomy-Strategy-1.pdf>
- <https://health.eac.int/publications/eac-food-and-nutrition-security-action-plan-2018-2023#gsc.tab=0>
- [Online trainings were delivered virtually by Hidden in Grains, Inclusive Business Sweden, and Stawi Foods and Fruits from Kenya.](#)

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