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GLOBAL FOOD SAFETY AND SUSTAINABILITY

George William Ssendagala

BSc. Food Science and Technology (iv)

Makerere University, Kampala, Uganda

Developments in the *Obushera* in Uganda – a Ugandan Traditional Fermented Drink

Overview

- Introduction
- Food safety
  - ➢Issues and possible impacts are identified.
- Sustainability of *Obushera* processing
  - ➢Workable solutions are proposed.
- Conclusion

Introduction

- Traditional fermented foods are foods produced by **native people** using their **inherited knowledge and skillful technology** from plant or animal raw materials.

- They are prepared either naturally or by adding starter cultures.

Introduction

- There are four main fermentation processes:
  - alcoholic,
  - lactic acid,
  - acetic acid and
  - alkali fermentation.

Traditional fermented foods have socioeconomic and nutrition roles.

Introduction

- Cereal fermentation is a lactic acid fermentation type. Cereal based fermented foods and beverages include;
  - ***Ogi*** from Nigeria
  - ***Boza*** consumed in Bulgaria, Albania, Turkey, Macedonia, Romania, southern Russia, and northern Africa,
  - ***Kvass*** which is consumed in central and eastern Europe,

Introduction

- **In Uganda**, traditional fermented food products are obtained from **cereals, milk and fruits** and the most common ones are; *Bongo*, ***Obushera***, *Kwete* and *Tonto*.

Introduction

- ***Obushera/Bushera*** is a collective term for a number of traditionally produced **sorghum** (*Sorghum bicolor* (L.) *Moench*) and/or **millet** (*Eleucine coracana*) beverages **originating from south-western Uganda**.

- **Four distinct types** of *Obushera* exist and these are; *Ekitiribita*, *Obuteire*, *Obutoko* and *Enturire* .
- *Obushera* is produced by **spontaneous fermentation**.

Introduction

- *Obushera* is **consumed by all age groups** and is used both as a weaning food and a thirst-quenching drink.

- It is increasingly becoming commercialized and is being produced and marketed by several commercial processors as a bottled beverage.

Safety of *Obushera*

- Food safety is the assurance that food will not cause any harm to the consumer when it is prepared and/or consumed according to its intended use.

- Unsafe food can lead to foodborne diseases or even death.

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- In developing countries, food borne diseases often go unreported because of poor surveillance and reporting systems.

- Lets us look at issues and possible impacts regarding the safety of *Obushera.*

Chance fermentation

- Although, *Obushera* production is becoming increasingly commercialized, the **processing is still largely an un-optimized artisanal craft** and the procedure relies on **chance fermentation** leading to inconsistent quality and short shelf life.

No form of heat treatment

- *Obushera* is generally **consumed while fermentation is in progress** and mothers claimed that *Obushera* in the earlier stages of fermentation when fed to children **caused stomach problems** (diarrhea) indicating the possible contamination of *Obushera* by pathogens.

Packaging of *Obushera*

- The **packaging** of the *Obushera* also needs to be checked since many processors especially those who do it informally employ the **use of old and used plastic bottles**, picked from rubbish collection sites.

A suck containing used plastic bottles

Methanol contamination

- *Obushera* was one of the traditionally fermented alcoholic beverages pointed out that are **prone to methanol contamination** given its ethanol content (0.20 – 0.75%) as indicated by earlier studies.

Premises

- The housing of many commercial processing units in **premises that are not well-defined** as stipulated by the Uganda National Bureau of Standards (UNBS) makes their compliance to national regulatory standards unguaranteed.

Pictorial

A picture showing some of the material and conditions under which Obushera is produced

A picture showing bottled Obushera.

Waste disposal

- Practices like;
  - emptying pit latrines by discharge through storm water,
  - indiscriminate disposing of waste,
  - poorly constructed drain systems can lead to contamination of communal wells.

- The discharge of insufficient treated effluent from industrial activities of factories into wetlands then into water bodies, notable into Lake Victoria.

Waste disposal

- Therefore, there is need to check and monitor the water quality of natural water resources as these provide water to the rural people and urban poor which they use in preparation of different foods with *Obushera* inclusive.

A drainage channel in Kikoni, Kampala

Sustainability of *Obushera* production

- Africa represents the **only region in the world** that has registered a **positive trend in the production** of millet and sorghum with a growth of 1.8% and 2.2% per year respectively for a period between 1981 to 2012.

- FAOSTAT (2016) estimated the production of millet and sorghum in Uganda to be at 234,298 tones and 314,553 tones respectively

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- Sorghum and millet can **withstand semi-arid conditions** and **require** relatively **low production inputs**, which partly makes their production more profitable.

- In addition, they are **widely accepted** and **deeply rooted** in the agricultural and **food systems of the people.**

- Let us look at the workable solutions proposed regarding *Obushera* sustainability.

Starter cultures

- Studies into the possibility of using microbial strains of *Saccharomyces cerevisiae* MNC 21Y, *Lactobacillus plantarum* MNC 21 and *Weissella confusa* MNC 20 as **starter cultures** for the *Enturire* type of *Obushera* have been piloted and evaluated.

Modification of the traditional process

- **Modification of the traditional process** has also been done. The application of starters in the modified process can further reduce the fermentation process by up to 12 hrs.

Packaging

- The **lack of appeal in the presentation and marketing** of the traditional food products is one of the problems traditional fermented products such as *Obushera* face. Initiatives should be taken to **train processors on appropriate packaging options** for *Obushera* so as to increase its appeal towards consumers

Hazard analysis and critical control points

- The different *Obushera* processing industries should try to develop hazard analysis and critical control points (**HACCP**) which is a well-structured scientific system that minimizes the risk hazards right from the beginning to end of processing.

Verify production premises

- The Uganda National Bureau of Standards (UNBS) should ensure that **every processor's premises satisfy the required standards** and also ensure the adherence to good manufacturing practices during the processing of *Obushera*.

A pasteurizer

Monitor process from the farm

- The quality of the *Obushera* should be addressed right from the producers' level by critically looking at **post-harvest practices** like sun drying of the grains (millet and sorghum) on bare ground which predispose grains to contaminants like soil.

Surveillance systems

- There is also need to **develop and improve** the existing **foodborne diseases surveillance systems**. For instance, the European Union and United States of America have the best foodborne disease surveillance systems which include executive agencies, independent risk bodies and reference laboratories.

Waste management

- The National Environmental Management Authority (NEMA), should **closely monitor the effluents** from industries.

- The **drainage system should also be improved** so as to ensure safe carrying of waste and storm water.

- **Public sensitization** about proper waste disposal.

Conclusion

- *Obushera* is a great tasting drink, profitable but also important because of its nutritional/healthy roles.

- The various safety issues associated with the way it's made may risk not only the lives of consumers but the growth of this industry putting its sustainability in balance.

Conclusion

- Since some of the steps have already been initiated and some piloted like the development of starter cultures, the various involved **stakeholders** should closely **work hand-in-hand** to ensure the sustainable production of safe *Obushera*.

THANK YOU