

The Importance of Drying and Preservation Methods for Ogbono Seed Quality

Nardia Oliveira*

Department of Microbiology, University of São Paulo, São Paulo, Brazil

DESCRIPTION

Ogbono seeds, derived from the African wild mango (*Irvingia gabonensis*), are valued for their nutritional and therapeutic properties. They are rich in fat, protein, and dietary fiber, making them a popular ingredient in many traditional dishes, particularly in West Africa. However, like all agricultural products, ogbono seeds are susceptible to microbial contamination, which can affect their safety and quality. Effective drying and preservation methods are important in managing microbial loads, extending shelf life, and maintaining the nutritional profile of these seeds.

Microbial contamination in ogbono seeds

Microbial contamination of ogbono seeds can occur at various stages, including harvesting, processing, and storage. Common microorganisms include bacteria (e.g., *Salmonella*, *E. coli*), yeasts, and molds, which can lead to spoilage and potential foodborne illnesses. The presence of these pathogens can also affect the organoleptic qualities of the seeds, such as taste, smell, and texture. Thus, understanding the impact of different drying and preservation methods on the microbial load of ogbono seeds is essential for ensuring their safety and quality.

Drying methods

Sun drying: Sun drying is one of the oldest and most common methods of preserving ogbono seeds. It involves spreading the seeds under direct sunlight to reduce moisture content. This method is cost-effective but highly dependent on weather conditions.

Oven drying: Oven drying involves placing ogbono seeds in an oven set at a controlled temperature, typically between 50°C and 70°C. This method provides a consistent drying environment and can be completed in a shorter time compared to sun drying.

Solar drying: Solar dryers are enclosed structures that use solar energy to heat the air and dry the seeds. This method is more efficient than sun drying while providing protection from environmental contaminants.

Freeze drying: Freeze drying involves freezing the seeds and then reducing the surrounding pressure to allow the frozen water to sublimate directly from the solid phase to the gas phase. This method retains the nutritional quality of the seeds while removing moisture.

Preservation methods

Chemical preservation: Chemical preservatives, such as sodium benzoate and potassium sorbate, can be applied to ogbono seeds to inhibit microbial growth. These preservatives work by disrupting cellular functions in microbes, thus preventing spoilage.

Vacuum packaging: Vacuum packaging involves removing air from the packaging environment before sealing the seeds. This method minimizes oxygen availability, thereby inhibiting aerobic microbial growth.

Refrigeration: Refrigeration is a common preservation method that slows down microbial growth by lowering the temperature. This method is particularly effective for short-term storage.

Fermentation: Fermentation involves the use of specific microorganisms to enhance preservation. In some cultures, ogbono seeds can undergo controlled fermentation, which can alter their microbial profile.

CONCLUSION

The microbial load of ogbono seeds can be effectively managed through various drying and preservation methods. While sun drying is traditional and cost-effective, methods like oven drying, solar drying, and freeze drying provide more controlled environments that significantly reduce microbial contamination. Similarly, preservation techniques such as chemical additives, vacuum packaging, refrigeration, and fermentation each offer unique advantages in extending shelf life and ensuring safety.

In conclusion, the choice of drying and preservation method should consider factors such as cost, desired shelf life, and the specific microbial load reduction needed. As consumer awareness of food safety continues to rise, adopting these

Correspondence to: Nardia Oliveira, Department of Microbiology, University of São Paulo, São Paulo, Brazil, E-mail: oliveira@nard.nz

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effective methods is essential for maintaining the quality and safety of ogbono seeds in the market. Future research should focus on optimizing these methods to enhance their effectiveness

while ensuring that the nutritional integrity of ogbono seeds is preserved.