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Protein based condiment cube mold

Abstract

African locust bean (*Parkia biglobosa*) seed was fermented to a protein based soup and stew additive. Fermentation was carried out for three days after which the fermented seeds were oven dried at a very low temperature for four days. Dried fermented seed were powdered and compressed using the fabricated mold into cubes

Keywords: locust beans, fermentation, mold, *Parkia biglobosa*

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Introduction

African Locust bean with botanical name *Parkia biglobosa* is a leguminous plant found in the Savannah region of Nigeria. The botanical name *Parkia biglobosa* was given to it by Robert Brown, a Scottish botanist in 1826.¹ He described the tree as genus of flowering plants in the legume group which belongs to the sub-family Mimosoideae and Leguminosae.²⁻⁵ *Parkia biglobosa* (African locust bean seeds) is a perennial deciduous tree that grows from 7m to 20 meters high.^{3,6,7}

Apart from fermented *Parkia biglobosa* seeds (Iru) serving as a rich source of plant protein to man with low cost, it also serves as good source of protein for animal feeds, chick and fish (Livestock).^{8,9} Apart from these nutritional values, fermented African locust bean seeds provide dietary fiber, energy, minerals and vitamins such as Vitamin B, riboflavin and Vitamin A.⁸ It also improves sensory properties of foods which includes the organoleptic characteristics (appearance, aroma and flavor).¹⁰ Fermentation is the biological conversion of complex substrate such as starch or sugar into simple compounds by microorganisms.¹¹ It can also be defined as the production of energy from food without using oxygen.¹²

So many work has been done on the processing of African locust bean seed into a protein based condiment using various methods. Various mathematical modelling and optimization principles have been employed to compare the experimental result with modelling or optimised result.¹³⁻¹⁵

Materials and methods

Raw materials

African locust bean seeds were bought from open market at the 6°40'48.47"N, 3° 9'19.6"E. The starter cultures used were freshly prepared in the Microbiology laboratory, Covenant University, Ota, Nigeria using method.¹⁶⁻²⁰

Preparation of seed

The raw seed were processed according to^{1,13,21,22} Figure 1 & Figure 2.

Fabrication of mold

Aluminium material was used for the fabrication of the mold. The

mold is 15.5cm long with 3cm wide cubes. The lock hole is 0.3cm to allow the upper part of the mold to key in tightly into the lower part. A passage for excesses was built into the mold to allow over flow of excess materials. Fermented oven dried samples were molded into cubes which can be used as soup additives (Figure 3 & Figure 4).



Figure 1 Boiled African locust seeds.



Figure 2 Processed African locust bean seeds.

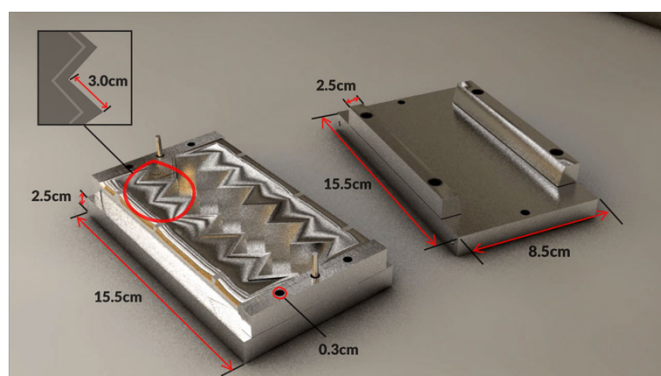


Figure 3 Dimension of the fabricated mold.

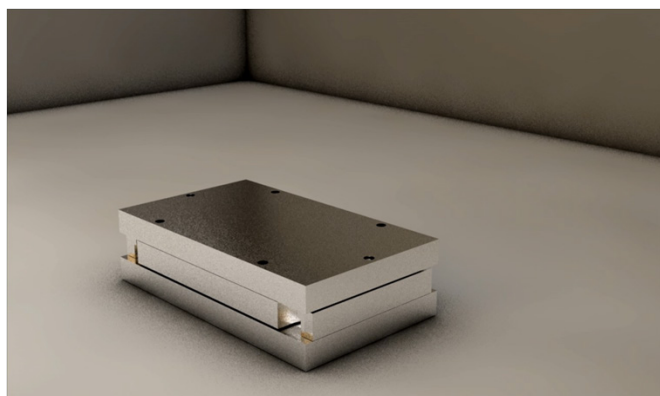


Figure 4 The mold.

Conclusion

Aluminium material is food friendly, hence it was chosen for the mold fabrication. It gave a good shape for the moulded samples [cubes]. Literature revealed that apart from various health benefit embedded in fermented African locust bean seed, is very rich in plant based protein, hence the cubes produced can be used as a substitute to meat or any other protein used in cooking soup.^{12,13,16-19}

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Conflicts of interest

Authors declares there is no conflicts of interest.

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