

# IMPROVEMENT OF THE TRADITIONAL FERMENTED FOOD : the *bikalga*

(Charles PARKOUDA, Irene Ouoba, Bréhima DIAWARA)

## Introduction

Traditional fermented foods take a significant role in the African nutrition. They improve the population nutritional state because of their nutritive composition (proteins, vitamins, minerals). Their production is source of income for women especially. Some of them have value of condiments. Among these fermented foods, *bikalga* obtained by natural fermentation of "*Hibiscus sabdariffa*" seeds after alkaline cooking, play a significant place. *Hibiscus sabdariffa* is produced once or twice a year. The seeds are used to produce condiment in some areas where *Parkia biglobosa* is absent. The flowers are used to produce beverage and leaves are used to prepare sauce. Producers of this culture export important quantities of the flowers in Europe and in America. The process of *bikalga* is known around West Africa but its production is very important in warm regions. The optimization of the process of *bikalga* production will contribute to solve the problem of variation of stability and quality of final product, therefore to improve the nutritional condition of the population.

## Objective

The *bikalga* is a local condiment obtained by natural fermentation of *Hibiscus sabdariffa* seeds; *H. sabdariffa* is a herbaceous plant commonly called guinean sorrel. The seeds of *Hibiscus cannabinus*, *Hibiscus asper*, *Hibiscus esculentus*, *Adansonia digitata* and *Ceiba pentandra* are also used with *Hibiscus sabdariffa* seeds for *bikalga* production in certain zones.

The main objective of the study is to improve the traditional technology process of *bikalga* production (fermentation) therefore to improve its quality and socioeconomical life of producers.

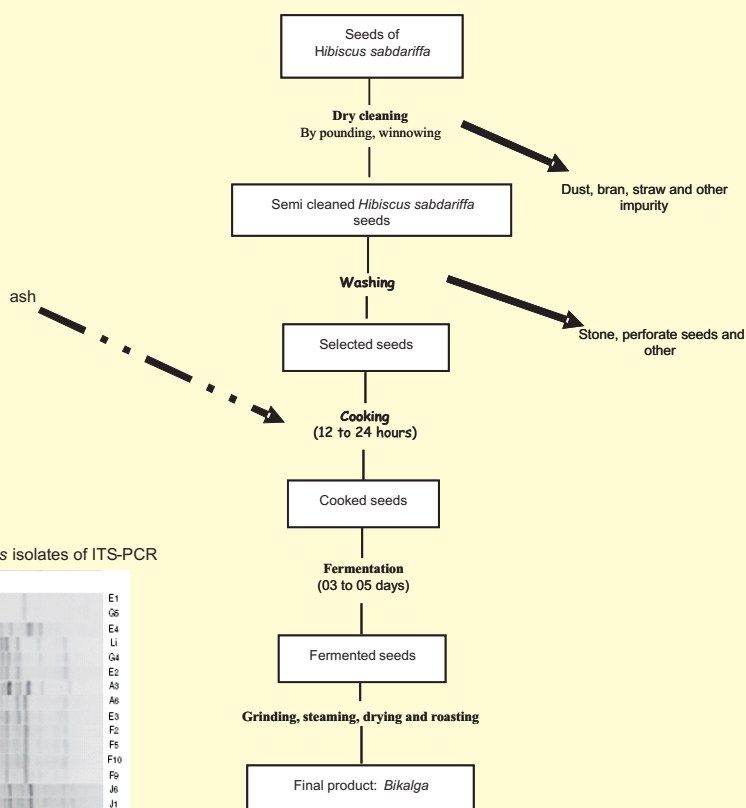
## Specifics objective

Standardization of the diagram according to the ethnic tribes  
Formulation of starter for control production

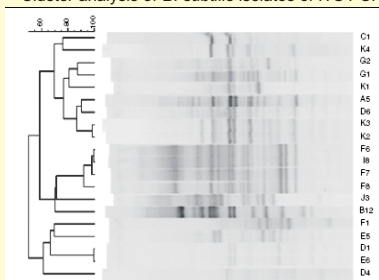
## Results

Tableau : *Bikalga* mineral composition

Parameter	Value (mg/kg)
Calcium	3.45 - 286
Phosphorus	1.49 - 17.00
Iron	11.4 - 175.28
Potassium	4.81 - 2800
Sodium	109.53 - 336
Magnesium	407
Zinc	0.97 - 90.79
Nitrates	34.9 - 61.31
Ammonium	15.4 - 141.40
sulphur	1.71 - 364.30
Copper	1.5 - 18.96



Cluster analysis of *B. subtilis* isolates of ITS-PCR



Cluster analysis of *B. licheniformis* isolates of ITS-PCR

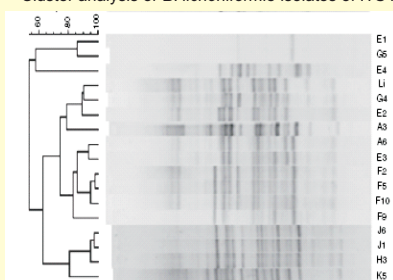


Figure : *Bikalga* technology flow diagram with *Hibiscus Sabdariffa* seeds

## Conclusion

Various species and ssp. of *Bacillus* are involved in fermentation of *H. sabdariffa* for production of *bikalga*. There is a need to select and introduce defined starter cultures for controlled fermentation of Roselle seeds to produce *bikalga* with consistent taste and nutritional quality, as well as improved marketability. *Soumbala* starters (made in our institute) can be used to produce safety *bikalga* that can be able to use like component of infantile pulps.