

# Processing and susceptibility to moulds of klui-klui, a peanut cake from West-Africa

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## Introduction

Peanut constitutes a cheap source of proteins, fats, minerals and vitamins in the diet of rural populations in West-Africa. It is processed into several food products including a cake named klui-klui (Fig.1). However, development of microorganisms, particularly moulds with concomitant mycotoxins production, is the major problem of peanut derived products. The aim of the present study is to assess traditional technologies and klui-klui susceptibility to microorganisms, particularly moulds and aflatoxins during klui-klui processing.

## Objectives

Specific objectives are to/ (1) assess risks associated with moulds development and mycotoxins production during peanut storage, (2) characterize technologies of klui-klui production, (3) assess the susceptibility of klui-klui to microbial contamination, moulds development and mycotoxins production during klui-klui processing and storage.



Fig.1: Klui-klui

## Material and method

A random check was performed on 200 women in the local market of Covè to determine relative proportion of klui-klui producers in the population. Peanut storage conditions, traditional processing techniques of klui-klui and its storage conditions were investigated in a survey using structured questionnaires. Follow up of the process allowed identification and assessment of critical control points, using decisions tree. Samples of peanut and klui-klui were collected in sterile polythene bags, packed in a thermocooler and transported to the laboratory for microbiological and physico-chemical analyses.

## Results

The traditional flow diagram of klui-klui processing used by producers is presented in Fig.2. The microbiological characteristics and aflatoxins content in peanut and klui-klui are summarized in tables 1 and 2.



Fig.2: Traditional flow diagram of Klui-klui processing

Moisture content of peanut ranges from 6 to 8% and water activity from 0.50 to 0.60, while moisture content of klui-klui varies from 4 to 7% with water activity of about 0.50. Peanut and klui-klui are susceptible to moulds development and aflatoxins production during storage. Peanut sorting before processing and klui-klui storage were the main critical control points for occurrence of moulds and mycotoxins in klui-klui. Freshly produced klui-klui is exempt of pathogenic germs and can be easily contaminated after processing due to lack of good manufacturing practices and storage conditions (Table1, 2).

Table 1: Microorganisms count (Log cfu/g) in peanut and klui-klui

Microorganisms	Non sorted peanut	Peanut sorted by producers	Peanut paste	Klui-klui	Klui-klui Stored for five days
Mesophilic aerobic bacteria	6.12 ± 1.64	4.59 ± 3.98	-	<1	3.26 ± 2.82
Moulds	3.99 ± 1.95	3.27 ± 0.66	4.70 ± 2.27	-	<1
Enterobacteriaceae	-	-	-	<1	-
Staphylococcus	-	-	-	<1	4.40 ± 1.09
Anaerobic sulfite-reducers	-	-	-	-	<1

- = no critical control point (not determined)

Table 2: Aflatoxins content in unsorted peanut and klui-klui stored for five days

Samples	Test results (µg/kg)			Average (µg/kg)	Threshold accepted (µg/kg) according to CE 1525/98
Unsorted peanut	6.4	6.3	6.4	6.3	4
Klui-klui stored for five days	2.1	2.3	2.3	2.2	4

## Conclusion and suggestions

Peanut and klui-klui can be contaminated by moulds and mycotoxins production can occur during storage. The present study suggests that good manufacturing practices and suitable packaging materials should be developed for a safe production and storage of klui-klui.

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