

J. KINDOSSI¹, V. ANIHOVI¹, G. VIEIRA-DALODE¹, N. AKISSOE¹, J. HOUNHOUGAN¹, J. P. CHACORNAC², S. LEROY², R. TALON²

¹Department of Nutrition and Food Science, Faculty of Agronomic Sciences, University of Abomey-Calavi, 01 BP 526, Cotonou, Benin

²INRA - UR454 Microbiologie, F-63122 Saint-Genès Champanelle, France

Introduction

Lanhouin is a traditional fermented fish based condiment mainly processed in the coastal areas of Benin. Its production is still artisanal, and two main conditions, aerobic fermentation and semi aerobic fermentation were noted in the processing of fresh fish into Lanhouin. The microbial characteristics of the products have been analysed. The coagulase negative bacteria (CNS) were enumerated along the two fermentation processes and reached approximately 4 log CFU/g after 3 days of fermentation and stayed at this level up to the end of the process.

The aim of this work was to characterize the staphylococcal population in Lanhouin during the two types of fermentation and at different steps and if relevant to develop indigenous starters either for traditional process in respect with African know-how or for products in European markets.

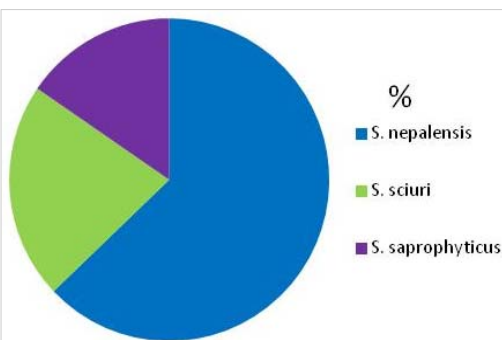
Methodology

For the identification two approaches have been applied.

First the isolates were identified by PCR multiplex which allowed identifying the isolates belonging to the *Staphylococcus* genus and the three species *S. epidermidis*, *S. saprophyticus* and *S. xylosus* (Corbière Morot-Bizot et al. 2004 J. Appl. Microbiol. 97: 1087).

Secondly the isolates were identified by a "staph array" targeting *sod* gene for the identification of 36 CNS species potentially found in food from animal origin (Giammarinaro et al. 2005 J. Clin. Microbiol. 43: 3673).

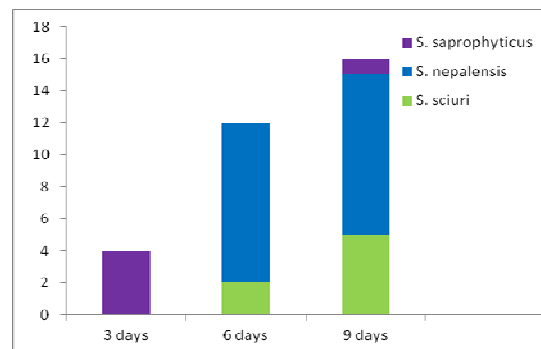
Inventory of the CNS species in the aerobic fermentation



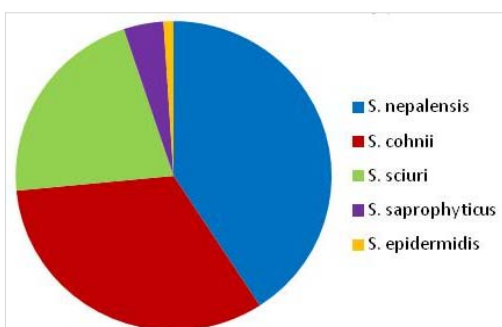
32 SCN were collected along the process of the aerobic fermentation.

The dominant species was *S. nepalensis* (20 isolates), followed by *S. sciuri* (7 isolates) and finally *S. saprophyticus* (5 isolates).

S. nepalensis was dominant from the 6th day of fermentation up to the end of the process. *S. sciuri* was also present along the process while it seemed that *S. saprophyticus* was mainly present at the beginning of the process.

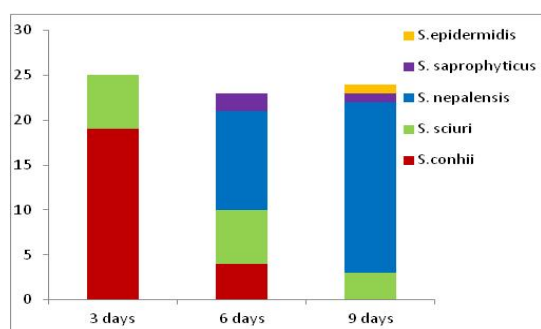


Inventory of the CNS species in the semi aerobic fermentation



72 SCN were collected along the process of the semi-aerobic fermentation.

In this fermentation, *S. nepalensis* represented 40% of the population, followed by *S. cohnii* subsp. *cohnii* 32% and *S. sciuri* 21%. The two other species represented minor population. *S. cohnii* subsp. *cohnii* was dominant at the beginning of the process, the 3rd first days of manufacturing and then it disappeared after 6 days. *S. nepalensis* was dominant from the 6th days of fermentation up to the end of the process. *S. sciuri* was also present along the process.



S. nepalensis : potential indigenous starter?

Safety criteria were studied on a collection of 15 strains:

- Absence of genes coding the enterotoxins SEA to SEI and the enterotoxin-like SEJ
- Absence of DNase activity and *nuc* gene coding nuclease
- Absence of haemolytic activity
- But resistance either to tetracycline or erythromycin



This study highlighted the identification of the staphylococcal species in the fermentation of Lanhouin, a traditional fermented fish.

S. nepalensis is the dominant species identified in both fermentation processes. More strains must be characterized to evaluate the prevalence of strains resistant to antibiotics in order to select innocuous strains as potential starter culture.

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