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L'OPTIMISATION DE LA FERMENTATION AU COURS DE LA PRODUCTION DU ABLO DE RIZ, UN PAIN HUMIDE CUIT A LA VAPEUR

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ABSTRACT

Ablo is a moist, steamed bread with an acidic, sweet taste that is very popular to Beninese. It was originally made with maize flour, but the technology used to make it has evolved, from the partial incorporation of rice flour into the maize flour to the total replacement of maize by rice. In general, some of the rice flour is replaced by wheat flour. However, it's possible to make Ablo with rice flour only. Ablo processing without wheat flour requires a relatively long fermentation time (6 to 12 hours), which could be optimized for a good Ablo valorization. In this context, our research was conducted to optimize fermentation conditions for the production of gluten-free rice-based Ablo that would be acceptable to regular consumers. After a preliminary survey, three non-consecutive Ablo production trials were carried out, enabling us to identify and characterize two technological variants for Ablo production. Optimal fermentation conditions were investigated using a composite centered experimental design on two factors (fermentation time and proportion of fermenter/kg of rice flour). Gas expansion, pH of the fermented dough, density and texture of the Ablo were used as responses to search for combinations of fermentation factors optimising Ablo quality. The optimum combination of 8-hour fermentation with 157.57 g of ferment (fermented dough from previous production) / kg of rice flour reduced the fermentation time to 4 hours less. Ablo resulting from the optimization of fermentation conditions had average values for density, pH, gas expansion, firmness, stickiness and chewability of $0.59 \text{ g/cm}^3 \pm 0.05$; 4.3 ± 0.02 ; $60.34\% \pm 0.41$; $30.97 \text{ N} \pm 1.24$; $11.70 \text{ N} \pm 1.86$ and $11.95 \text{ N} \pm 2.29$ respectively. The attributes of optimised Ablo and traditional Ablo were significantly different. However, the overall acceptability score of the optimised Ablo was not significantly different from the traditional one. The use of locally produced rice in Benin for the production of gluten-free Ablo rice and the dissemination of the backslopping fermentation method to female Ablo rice producers would be the subject of another study.

Keywords : *Ablo, optimization, texture, fermentation.*