Optimization of traditional processing of local broken rice-based Ablo

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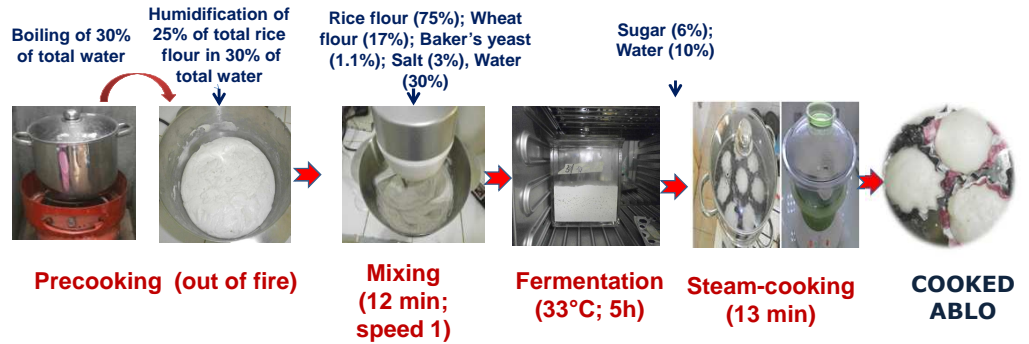
AFTER CONGRÈS
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INTRODUCTION

Rice is widely produced in West African countries but leads mainly to broken rice. Local broken rice can be valorized though Ablo processing which is highly variable. This wet bread, made with rice and/or maize flour is widely consumed in West Africa as side dish for different kinds of sauces.

How can we standardize broken rice-based Ablo processing?

CONCLUSION

The optimised broken rice-based   Ablo derives from 121 mL of water for 100 g of rice flour as followed:

Boiling of 30% of total water

Humidification of 25% of total rice flour in 30% of total water

Rice flour (75%); Wheat flour (17%); Baker's yeast (1.1%); Salt (3%), Water (30%)

Sugar (6%); Water (10%)

Precooking (out of fire) → Mixing (12 min; speed 1) → Fermentation (33°C; 5h) → Steam-cooking (13 min) → COOKED ABLO
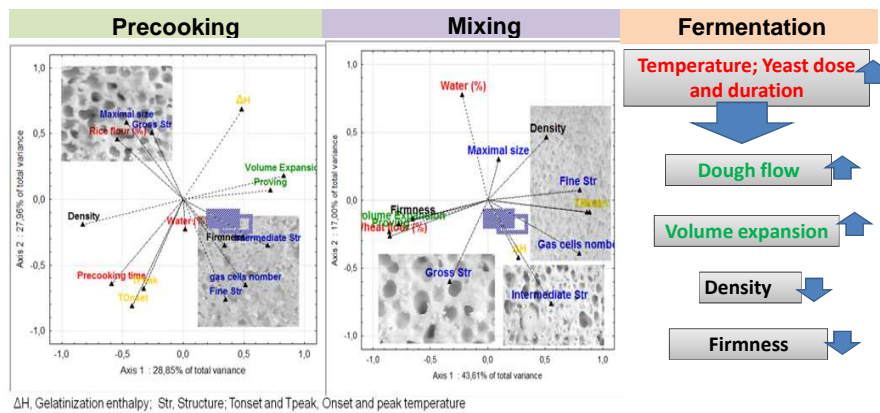
AIMS

➢ Assess the effect of precooking, mixing and fermentation conditions on broken rice-based Ablo quality;

➢ Establish optimal processing conditions leading to acceptable broken rice-based Ablo for urban consumers.

METHODOLOGY

o Plant material: Rice variety IR841

o RSM of central composite design using:
- **Precooking**
  [amount of rice flour (25-50%); amount of water (40-90%); duration (0-10 min)]
- **Mixing**
  [wheat flour (7-27%); water (12.6-35%)]
- **Fermentation**
  [baker's yeast (0.06-1.2%); temperature (26.6-33.4°C); Duration (0.6-7.4 h)]
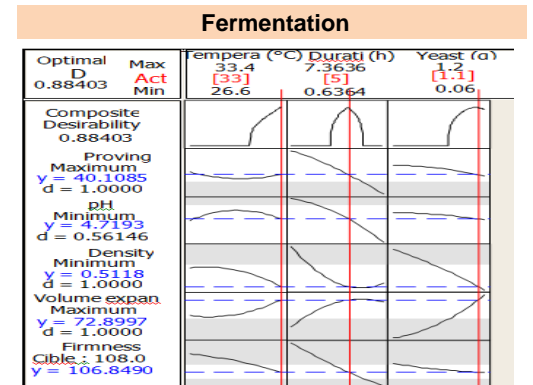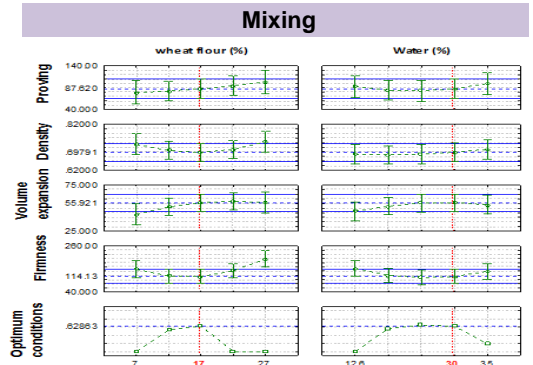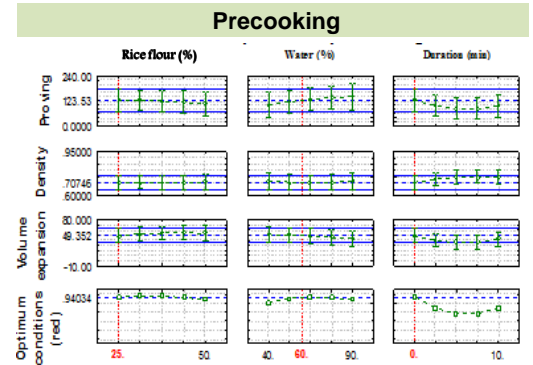
RESULTS

➢ **Relationship between processing conditions and fermented dough and Ablo properties**

| Precooking | Mixing | Fermentation |

Temperature; Yeast dose and duration → Dough flow → Volume expansion → Density → Firmness

ΔH, Gelatinization enthalpy; Str, Structure; Tonset and Tpeak, Onset and peak temperature

Variations of processing conditions (**in red above**) strongly affect dough functional properties (**in yellow above**), dough performance (in green above) and Ablo quality (in black and blue above).

➢ **Optimum processing conditions**

Precooking

Mixing

Fermentation