

EFFECTS OF PROCESSING PARAMETERS ON THE CHEMICAL QUALITIES OF SMOKED CATFISH

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ABSTRACT

The effects of osmotic dehydration (OD), fish size (FS) and smoking temperature (ST) on the chemical qualities of smoked catfish were investigated. Two sizes of fresh catfish' the small (200-450 g) and big (800-1000 g) were osmotic dehydrated using sodium chloride (20 "brix and 25 "brix at 40 °C for 6 hours). Then smoke dried at 70 and 150 °C with sawdust - fuelled smoking kiln fitted, w ith analog temperature sensor. The control samples (fresh) OD samples and the osmotic dehydrated smoked dried samples (ODSD) were subjected to proximate analysis (moisture ash protein fat, carbohydrate)' oxidative tests (free fatty acid peroxide value, thiobarbituric acid (TBA), pH) and mineral analysis using standard methods The result indicated significant difference ($P < 0.05$) occurred in the moisture protein and fat contents of ODSD samples when compared with OD (control) samples. The dual processing effect had a positive effect with an increasing value in protein fat and significant reduction in moisture content compare with the control. The small sample has 25.11, 46.59, 0.45 and 14.69, 4.56, 73.11% for protein fat and moisture content at 150 °C with 20% OD and control respectively• while at the same temperature with 25% the big sample and control has 25.28, 36.50, 6.26 and 16.94 5.58 71.58% for protein fat and moisture respectively. OD resulted to a decrease in pH from 7.20 in control sample to a range of 6.70-6.90 while ST further had the pH decreased to 6.30-6.50 and 6.5-6.70 for small and big sizes respectively. The ODSD samples were within the acceptable limit of 6.8 to 7.0. The OD samples gave a lower FFA value (0.24- 0.45) while on the ODSD samples FFA (20% 150 °C) gives 2.36% and {20% 70 °C) gives 10.00% increased with increase in drying time. The peroxide v alue also increased a s drying temperature increases with value ranging from 6.74 to 16.28 mEq/kg and 7.60 to 20.78 mEq/kg for the 150 °C small and 70 °C big respectively. The treatment yielded samples, ith high concentrations of potassium calcium and heavy metals (Cd and Cr) were within tolerable limit• the minor elements (Ni, Mn and Cu) were also in traced amount in all the samples studied. Based on the study it was found that small size *Clarias gariepinus* pretreated with 20% osmotic dehydration solution and smoked dried at 150 °C gave the best proximate oxidative and minerals result and was therefore recommended.

KEYWORDS: Chemical Qualities, Preservation and Processing, physical and Mechanical Modification