

THE STORAGE STABILITY OF BREADED CATFISH AND TILAPIA FILLETS

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Introduction

On the whole, freshwater fish is not as popular as the marine fish. However, they are present in greater abundance especially with the growth in the aquaculture sector worldwide. One of the ways to increase their popularity is to formulate convenient foods such as breaded product to cater for the life style in modern society. Breaded products are deep-fried products. Thus, this will cause an additional need to monitor the storage stability of the developed product, knowing that fish products are relatively perishable products due to rancidity, textural denaturation, microbial and others. Quality changes of breaded freshwater fish during normal cold-chain handling have not been documented before. Therefore, the objectives of this study were to develop pre-processing treatments to increase acceptability of the starting material, to determine the suitability of synthetic and natural antioxidants, antimicrobe and also to recognise the pattern of spoilage of the products under normal commercial frozen storage.

Materials and Methods

Live fish were secured from identified aquaculture farms and brought to the faculty's laboratory. They were killed immediately, filleted and washed with ice-slush and cool water, and additional washings for treated fillets. Fillets were drip-dried and ready for battering and breading processes. Antioxidants (BHA and tocopherol) were added to frying oils

while potassium sorbate was added to the batter formulations. Nothing was added to controls. Among the parameters monitored were oil pick-up in batter and fillets, texture, thiobarbituric acid reactive substances (TBARS) values, viable microbial counts and sensory evaluations. They were monitored periodically during frozen storage at -20°C.

Results and Discussion

The work on washing treatment as a pre-processing step is very preliminary in this project. Traditional household practices such as washing with lime and tamarind juices and acetic acid was investigated. It was found that the acid washings resulted in improved overall sensory scores, however, samples were slightly tougher in texture. The treatment did not improve the stability of the breaded fillets towards rancidity development as indicated by the TBARS values. Washing with tamarind juice gave the best acceptability scores. In a parallel study, the effect of potassium sorbate, BHA and tocopherol were evaluated. Potassium sorbate was found to be effective in reducing the microbial growth in fillets and coatings during storage. The microbial count of both fillets and coatings were in the region of 1×10^{-2} CFU/g which is considered to be very good according to the microbial standard for fish products. BHA (butylatedhydroxyanisole) was found to be a better antioxidant for this product. However, tocopherol and BHA had synergistic effect. The expected shelf life of the frozen breaded products was greater than 6 months.

Conclusions

The washing treatment as a pre-processing treatment to improve the acceptability of the raw material and the end product from freshwater fish should be looked into further. The breaded freshwater fish requires the addition of antioxidant as well antimicrobial agent to prolong its shelf life under normal cold-chain handling. Breaded freshwater fish is a very marketable product.