

MICROBIOLOGICAL QUALITY OF DRIED FISH
BASED ON
DIFFERENT PROCESSING METHODS

By

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ABSTRACT

Dried fish is the cheapest source of animal protein in Sri Lanka. North, North western and Eastern provinces are the major dried fish producing areas in the country. Traditional method of dried fish processing is an important means of making fish available to poor consumers those living in rural areas. Out of all food components dried fish has the highest protein content (50.7% by wt) about 67% of the dried fish requirement of the country is met by imports.

Objectives of this study were to investigate the different methods of dried fish processing in a major processing area (Negombo) and compare the chemical and microbial quality of dried fish under each method. In addition to determine the contributory factors which affect the quality of the final product and finally to compare the microbial and chemical quality of the dried fish with the Sri Lanka Standard for same.

The trained processors use edible quality fresh fish as the raw material, and the fish were dipped in 10 – 15 % brine solution for 12 hours and dried for about 6 – 8 days. Municipality tap water was used by these manufacturers for washing process. The large-scale processors used fish that is not suitable for consumption as fresh fish as the raw material and the application of salt was by applying a paste of salt on the surface of fish. Drying period was 3 – 4 days and the fish were not turned during drying. The water used for washing was either tap water or water from tube wells. The small-scale processors used same quality fish as large-scale processors and the application of salt was also the same.

The water used lagoon water for washing. The drying period was 3 – 4 days but the fish were turned frequently.

When the dried fish samples were compared with the Sri Lanka standard for dried fish, all the parameters (Moisture percent by mass, Sodium chloride percent by mass on dry basis, Total colony count, Total coliform count) in the samples analyzed were within the acceptable range.

During this study, 3 main methods of dried fish manufacture were identified. They were the trained, large-scale and small-scale processors

The sample obtained from trained processors showed the mean highest moisture percentage of 30.46 where water activity (a_w) value was 0.684 and 23 % NaCl.

The samples collected from large-scale producers showed the mean highest moisture content of 45.05 and (a_w) was 0.841, which was highest than dried fish produced by other two methods. (28.59) NaCl is present in moderate.

The samples from small-scale producers showed the mean moisture value of 40.56 and water activity (a_w) was 0.703. It also showed the highest NaCl % (29.66)

The total colony counts of aerobic bacteria in dried fish samples collected from trained processors, large-scale processors and small-scale processors were range $5 \times 10^1 - 5.2 \times 10^2$, $3 \times 10^1 - 9.6 \times 10^3$ and $4.1 \times 10^1 - 3.0 \times 10^3$ respectively.

Yeast and mould count in dried fish of training producers, large-scale and small-scale processors were $<10 - 5 \times 10^1$, $<10 - 3.8 \times 10^2$ and $6.6 \times 10^1 - 1.1 \times 10^3$ respectively.

The highest yeast and mould counts were observed in the dried fish samples collected from small scale processors and it was ranged from $6.6 \times 10^1 - 1.1 \times 10^3$ (cfu/ml). The lowest values were observed in the samples collected from trained processors.

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Total colony counts in 5% and 15 % salt media were analyzed in dried fish of processing only at 5 % salt media; it showed positive results with Balaya (*Katsuwanas pelamis*) and Sprats (*Anchoviella indica*) 7×10^7 and 1.5×10^8 (cfu/ml)

The results also indicated that the predominant species of fungi in the dried fish samples were as *Aspergillus flavus* *Aspergillus ochraceus* *Aspergillus parasiticus* and *Mucor*