

## AN IMPROVEMENT IN THE CHEMICAL PRESERVATION OF CURED FISH PRODUCTS

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Of late considerable interest is being evinced in the preservation of cured fish by the application of harmless chemical preservatives; and some work on these lines has already been done under the tropical conditions of India (1-8). In this preliminary note, the salient features of the improvement achieved by the author in this direction are described.

As a departure from the methods already in vogue, in this new technique the application of the preservative comes only on the finished product. Fish cured in diverse ways such as sun-dried, dry-cured, wet-cured, pit-cured, smoked etc. have been treated in this manner to improve their storage life. The technique consists in smearing fine, dry, Tata salt containing 3% sodium propionate on the product at the time of packing them in container for storage or transport. The quantity of the preservative mixture required for dry-cured fish is found to be about 1/10th the weight of the cured fish product. In the case of the wet-cured products the concentration of sodium propionate can be effectively reduced to 2% level. Though the method is quite simple, the effect brought is remarkable. A brief summary of some of the results achieved is presented in the Table. The treated products from dry cured fish have been found in good condition, free from 'mould', 'red' and other visible signs of spoilage up to a period of 9 to 12 months. The wet-cured fish similarly treated with preservative remained in good condition till about 3 months as against their normal shelf-life of about 2 weeks.

As the above preservative mixture was not found to ward off the onset of rancidity in the cured products, butylated hydroxy anisole (at 0.5% level) was incorporated into the above mixture and it was found that this considerably retarded the onset of rancidity. The introduction of 0.5% of sodium sulphite into this mixture has further favourable effect in controlling the "browning" met with in cured products.

TABLE

Details of sample	Onset of fungal attack. No. of weeks		Onset of red No. of weeks		Onset of rancidity No. of weeks		Onset of smell No. of weeks		Total period of observation. No. of weeks
	Treated	Control	Treated	Control	Treated	Control	Treated	Control	
Wet-cured sardine									
Lab sample . . . . .	37	6	*	*	15	6	31½	2	49
Wet-cured mackerel, do. . . . .	*	6	33	14½	11	6	31	2	49
Dry-cured mackerel, do. . . . .	*	9	*	9	17½	2	*	14½	54
Dry-cured shark Fish-curing Yard . . . . .	*	37	46	10½	..	..	46	11½	49
Dry-cured mackerel—Market Sample . . . . .	*	8	25	3	..	..	33	3	43
Dry-cured <i>Caranx</i> —do. . . . .	*	*	*	8	..	..	38	4	38

Control—Sample without any preservative treatment.  
 Treated—Same sample treated with mixed preservative.  
 \*Free from mould, red or rancidity as the case may be.

The preliminary trials have shown that apart from samples prepared in the laboratory the treatment was effective when tried on samples collected from cured fish markets and from commercial fish curing centres. The extension of storage life obtained in these cases has been very encouraging, the period depending upon the initial condition of the sample treated.

The technique described has the following distinct advantages over the methods hitherto practised.

- (1) In one step the application of the preservative could simultaneously control 'mould', 'red', 'browning', rancidity and bacterial spoilage of the cured product for fairly longer periods of storage.
- (2) As the preservative mixture is applied on the finished product, the chances of the chemicals penetrating into the interior of the meat are very much reduced thereby avoiding undesirable flavour changes.
- (3) If ready mixed preservative powder is available, even untrained fish-curing personnel can easily and safely apply it on the fish.

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