

Quality Control Research On Indian Fishery Products

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THE rapid increase in the production and use of Frozen and Canned Fishery Products presents innumerable problems for the Fishery Technologists and the Bacteriologists. The former is seized of the problem of retaining all or most of the original quality of the Fish even after processing, while the latter has the responsibility to see that the processed products do not present any hazard to public health. It may be pointed out that Frozen Fishery Products have been remarkably free from danger so far and in the case of Canned Products only few isolated cases of food poisoning have hitherto been reported - all from foreign countries. This happy situation is no doubt encouraging but should not be misconstrued to the detriment of the industry. Continued stability and progress of the industry depends entirely on the maintenance of high quality and hygienic standards for the products.

As far as India is concerned, the Central Government envisaged the need for quality control

even in the early stages of development of Fish processing industry in the country and established a Quality Control Section under the Central Institute of Fisheries Technology, Ernakulam. This Section has been functioning since 1958 in close co-operation with the industry and has contributed substantially to the general improvement in the quality of manufactured Fishery Products in the Country.

The main functions of the Section are as follows:

- (1) Random Check on the Quality of processed Fishery Products manufactured in the Country.
- (2) Survey and study of various sanitary aspects in the collection, preparation and processing centres.
- (3) Assisting the Industry to implement Quality Control measures and in

improvement of product quality and factory sanitation.

- (4) Formulating quality standards for various fishery products.
- (5) Carrying out both short term and long term investigations connected with Quality Control of Fishery Products.

The Technical staff of the Section visits all the Fish processing factories in the Cochin area, who require the services of the Institute, at regular intervals. A continuous check of the quality of raw materials and processed fishery products is made by on the spot inspection and by detailed examination of the samples in the laboratory. The defects noticed in each factory is brought to the notice of the processors from time to time and a record of individual performance is maintained by the laboratory. This study has also been useful in many more ways. It helps to elucidate the normal fluctuations as well as fluctuations brought about by various defective processing conditions on the quality of finished products during different seasons of the year. It further shows what quality standards, both from organoleptic and microbiological point of view, different types of pack can attain under normal commercial conditions. For example, it has been found that in the case of Frozen Prawns the headless packs can maintain a total bacterial plate count of less than 1.0×10^6 due either to the larger sizes or to the protective shell covering, while peeled and deviened pack invariably has a slightly higher count due mainly to the larger meat surface area exposed to bacterial contamination.

The study has also been extremely useful in clearly differentiating the colour attained by different species of Prawn during blanching in the canning process. In short the study reveals on the one hand the actual condition of the raw material as they arrive in the processing centres and on the other what changes the materials undergo while in the factory. The former, however, is not entirely within the control of the processor under the existing conditions of supply of raw material while it will be within the capacity of the factories to restrict any deteriorative changes in the material while in the factory. It must, however, be, pointed out that even in the case of the former there has

been a good deal of improvement in recent years resulting from greater use of ice and from the adoption of improved methods of preparation, storage, transportation etc.

When it comes to a question of maintenance of quality of the material within the factory one faces the problem of factory sanitation. In the studies mentioned above being carried out by the Quality Control Section, particular emphasis is given to the various aspects of factory sanitation and their individual and collective effect on product quality. Contamination of the material - mainly bacteriological - can happen from water used for washing and glazing purposes, ice used for cooling, table and vessel surfaces that come in contact with the material, floors, walls and ceilings, of the factory, workers, accumulated fish waste etc. The rate of build up of bacteria and extent of contamination from these sources form the subject matter for detailed study by the Section. As a result several outwardly trivial but extremely important factors have been brought to light, which may go a long way in improving the hygienic quality of Indian Fishery Products.

The success of the Quality Control Programme of the Institute is reflected in the following Statement:

TABLE I

*No. of samples examined by
Quality Control Section*

	1959-60	1960-61	1961-62	1962-63
Canned Prawn	61	77	684	1192
Frozen Prawn	51	466	1193	1285
Canned Sardine	2	21	20	28
Frozen Lobster	19	53	53	43
Frozen Frog legs	—	93	87	72
Fresh Prawn	—	131	83	135
Fresh Lobster	—	8	—	15
Fresh Frog legs	—	13	10	20
Dry Prawn Pulp	18	40	36	18
Water	—	19	16	103
Tables etc.	—	8	10	15

The statement reveals that more number of Canned and Frozen Products are examined every

Year than any other manufactured products. This is largely because of the fact that these industries are concentrated in organised factories while product like dry Prawn pulp are produced in fishing villages.

The continued effort of the Section has brought about a remarkable improvement in the quality of Frozen and Canned products. The percentage of standard quality Frozen Products has risen from about 50% in 1959-60 to above 75% in 1962-63. This is creditable considering the existing condition of the fishing industry. There is, however, room for further improvement and every effort is being made by the industry and the Quality Control Section to achieve it.

The survey and study undertaken by the Section also helps in formulating quality standards for various fishery products. Standards have already been finalised for Frozen, Canned and dry Prawn products, and for Sardine, Pomfret and Mackerel Canned in oil. Work relating to other fishery products like Frozen Frog legs, Lobster Tail, Dried and Salted Fish products etc. is underway.

Short term investigations having direct relation to quality problem are handled as routine by the Quality Control Section. Some are referred to the Section by the industry while the others are initiated by the Section itself for the benefit of the industry.

One such problem at present engaging the attention of the Section is the study of possible incidence of fecal indicator organisms in manufactured fishery products, the sources of their contamination, if any, and preventive measures.

The problem is highly important from the public health point of view and as such the study will be yet another milestone in our effort to produce high quality fishery products.

Another important problem of immediate practical application under investigation in the Section is the studies on quick tests for assessing the freshness of Prawns. The industry at present depends entirely on visual and organoleptic characteristics like smell, colour etc. for judging the suitability of raw material; and these are known to be subject to wide variations and sometimes erroneous conclusions. Conventional methods for assessing the microbiological or chemical quality of the products are unsuitable for adoption in factories as routine as these are elaborate and time consuming. The aim of the present investigations is to overcome these difficulties by providing the Industry with a quick and accurate method for assessing the freshness of their raw material.

In conclusion it may be pointed out that in the matter of quality, Indian processed Fishery products, particularly Frozen and Canned products, are second to none. What the industry actually lacks is the capacity to maintain uniform quality throughout. Off and on we hear the disquieting news of non-acceptance of the products owing to substandard conditions. The sooner this disappears the better for the stability of the industry. The most obvious solution to this is a better appreciation of the importance of Quality Control and larger application of technological development in processing of Fish. The Central Institute of Fisheries Technology, through its different research and extension Sections, will help the industry in its efforts.