

BACTERIOLOGICAL STANDARDS FOR FRESH FISHERY PRODUCTS



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The primary objective of every commercial fishery enterprise will be to deliver to the consumer fish products in the best possible condition at the right price and in the right packing. Quality retention is absolutely essential especially in the case of fish and fish products, as consumer preference and ultimate image of the products will largely depend on quality. However, this is very often forgotten by the producers, to whom quality means only the minimum which will sell rather than the best that is attainable. A strict definition to the term 'quality' which could satisfy all sections including producers, processors, consumers and public health authorities, is not available today. In fact there is a tendency to define the term in different ways by different people — in terms of chemical composition and bacterial content by biochemists and microbiologists and in terms of aesthetic qualities like presentation, packing etc: by marketing agencies. But the acid test even now lies in the opinion of the consumers who rely mainly on the texture, flavour, appearance and smell and on the cooking characteristics in grading a product.

Added to this is the stipulation that the product must be free from public health hazards. Any successful quality control should therefore aim at a synthesis of all these factors. To achieve this, one must go back to the oft-repeated axiom 'start with a quality raw product, handle it with the best of attention and quality processing and you will wind up with a quality end product'.

Discussions have been going on, not only in India but also in other parts of the world, on the desirability of having microbiological standards for processed fishery products. The conference held in Halifax, Canada, in 1969 devoted considerable time to discuss this problem at great length. In India, bacteriological standards are already in existence for certain types of processed fishery products like cooked frozen and canned prawns for export and it has been decided to extend this to fresh frozen prawns also in the near future. The processors, while prepared to give unqualified support to any move to improve quality of the finished products, doubt whether an end product inspection without adequate control at all stages

will not hamper the growth of the nascent industry. On the other hand, the Government feel that in order to improve the image of the Indian products in the international markets, it is necessary to make the already existing inspection system complete in all respects by including microbiological standards also in the specifications for the products. Both these arguments merit consideration and careful study as the issue is potent with far reaching consequences and is closely linked with the prestige of the country and the future of its export trade.

The first and most important point to be considered in this context is whether introduction of bacteriological standards will adversely affect our exports. The answer would be — yes to some extent in the beginning in quantity but not probably in value. The survey and study conducted by the Central Institute of Fisheries Technology of the bacterial quality of processed prawn over the years, have no doubt, shown remarkable improvements in recent years. However, these studies point to one significant factor that under the existing set up of prawn processing in the country, improvements beyond a certain level is impractical. While in organoleptic, physical and even chemical characteristics, the quality of the Indian products very often show near perfection, in regard to bacterial content nearly 25% of the products, on an average, is still sub-standard. The products may even be perfect organoleptically and as edible as those that meet the specifications, except that the total bacterial load, constituted mainly of harmless bacteria exceeds the usual limit. In very rare cases, on the other hand, a product from this class can also show presence of organisms of public health significance;

and it is because of such possibilities that the authorities insist on strict bacteriological standards for the products which are ultimately to be consumed. The question often asked in this connection viz. "why should there be bacteriological standards for fresh frozen products which will ultimately be cooked by the consumer" also requires careful analysis. Presence of large numbers of organisms of the Coliform group, for example, will indicate that the product has been processed under very unhygienic conditions, which by itself would make the product undesirable. Strains of many bacteria of the pathogenic group can also produce toxins. Thus it is important that the products must be free from such organisms irrespective of whether they are fresh or cooked.

Now we come to the other side of the picture, viz. will there be a fall in the country's foreign exchange returns from fishery products if bacteriological standards are introduced for end point inspection? As already mentioned, it can affect to some extent in the beginning. However, one could safely assume that if we are able to convince the consuming markets that the products exported from India will satisfy the strictest test under any circumstances, there should be a substantial increase in the unit value returns for our products. However, there is so much to be done and achieved before this image is created, which means time and hard work on the part of the processors, the exporters and the inspecting authorities. If these are guaranteed, the move to make our inspection system more complete, will definitely be one of the positive steps towards removing the price disadvantages from which India's exports of fishery products is still suffering.

It is pertinent at this stage to examine the validity of some of the major questions posed by the industry in defence of their arguments.

- i) Whether an end product inspection of bacterial content is necessary and whether controls exercised at different stages of processing cannot safeguard the bacterial quality of the products?
- ii) If, however, it is decided to have an end product inspection what shall be the criterion of tests?
- iii) Why should there be a test for bacterial quality when importers do not insist on such standards?

On the first, it is to be pointed out that the question itself is the result of a misconception that quality control and inspection are one and the same. The producers and exporters do not realise that these are two distinct entities, the former aimed at controlling the quality during the production and the latter to test conformity of the products to established standards. While the first is the producers' own responsibility guided and aided by the quality control research of a Government laboratory, the latter is the statutory responsibility of the Government. Quality control aims at producing the best and inspection ensures that only the best goes out to the consumer. Thus, both in functions and intentions, the two aspects are clearly different.

In this connection, the modern views about bacteriological standards for frozen food products as emerged in the recent International Conference of Food Technologists deserve mention. The emphasis appeared to be more on guidelines for the industry rather than

on microbiological contents. This of course will give the first impression that modern thinking rules out judgment of the acceptability of a frozen food product based on the total bacterial content of the finished product. Experienced microbiologists would agree that the standard plate count of a frozen fish product does not by itself mean anything. A high plate count can be either the result of heavy product spoilage in which case the product will be declared as substandard even otherwise or the result of mere external contamination totally unrelated to intrinsic quality of the material. On the other hand presence of pathogens or coliforms as pointed out earlier, will immediately assume importance as it shows certain specific undesirable conditions quite independent of either intrinsic spoilage of the material or its total plate count.

For reasons explained above as well as for the fact that the count determinations can vary within wide limits, making it undependable as an absolute figure, one cannot rely on total plate count as an index of quality. On the other hand, it has to be insisted that the final examination should cover tests for the presence of organisms belonging to *E. coli*, Staphylococci and Salmonellae.

Bacteriological standards are in operation in some countries like Canada and Japan even for fresh fishery products. Regular tests are made by the Canadian Inspection Laboratories on random samples of fresh, iced and frozen fish products intended both for export and internal trade. Japan has laid down a total plate count of 1,00,000 per gm. for fresh frozen shrimp as the minimum standard. In other countries like USA and UK too, tests are made mostly on suspect samples. ●●