An overview of Export of tuna products from India

The following article is a part of FIFP webinars conducted on 31st October 2020 on the topic of Value addition in fishery industry' (Part1)

Note from the Chief Editor:

Main theme of the second in the series of FIFP webinars was 'Value addition in fishery industry' (Part1) conducted on 31st October 2020. In all, three presentations were made covering an overview of export of tuna products from India; Sun, Sand, Sea and Tuna: a glimpse of the Maldivian Tuna industry; and Our tuna, Our wealth, Our future; lessons from the South Pacific Tuna industry. Sri. T N Venugopalan presented an overview of export of tuna products from India. He described the brief history and growth of tuna-based exports from India while highlighting the potential of yellow fin tuna for product development. He explained the problems related to quality and food safety; and environmental and sustainability issues in tuna fishing industry and suggested mitigation measures. Challenges in tuna export trade and possible opportunities for future development are briefly reviewed.

Introduction

History of targeted tuna fishing in India, its processing and export dates back to the year 2001. The trade in tuna-based product comprises mainly of two major species: Yellow fin tuna (*Thunnus albacares*) and skipjack tuna (*Katsuwonus pelamis*). They are landed mainly during September to April. Cochin and Vizhinjam in Kerala; Nagapattinam, Thoothukudi and Chennai in Tamil Nadu, Vizag in Andhra Pradesh and Veraval in Gujarat comprise the major landing centres.

Tuna is mainly exported either as whole round or gilled and gutted (G/G) to countries like Thailand, Vietnam, Indonesia, Tunisia, Turkey, Iran and EU countries like Spain, Italy, France and UK. Frozen tuna exported from India is mostly canning-grade which is used as raw material by canaries in importing countries. A minuscule quantity is exported as fresh/ chilled. Chilled tuna trade is a small but growing segment where there is better value realization. However, the suspension of international flights by major airlines in the wake of Covid-19 pandemic has brought the fresh chilled tuna export to a grinding halt by early February 2020.

According to MPEDA reports, India exported 36,287 tons of tuna valued at $56.58 million in 2019-20 registering a sharp decline compared to the export of 55,322 tons tuna valued at US$ 90.47 million in 2018-19. This sharp fall may be due to the Covid-19 induced lockdown in major importing countries like Italy and Spain.

Though the international trade in tuna from India has been registering impressive growth and steady increase over the years, it is beset with numerous challenges related to quality and food safety; and environmental and sustainability issues. Challenges in tuna export trade and possible opportunities for future development are briefly reviewed.

1. Issues related to quality and food safety

A. High histamine content

Presence of histamine above the maximum permissible limit in tuna exported from India is a recurring problem which very often leads to product rejection by importing countries. This is due to the temperature abuse during post-harvest handling that could have occurred either onboard the fishing vessel, during transportation to processing centres or during processing and storage in factories. Elevated product temperature above + 4° C, which can occur anywhere in the supply chain results in histamine formation above the maximum level prescribed by the regulatory agencies. This issue can be alleviated by proper icing of the product immediately after harvest and maintaining the chilled temperature throughout the supply chain.

B. Honey comb formation

Honey comb formation is another quality issue which is of common occurrence in canned tuna produced from stale raw material. The meat in such cases appears like honeycomb. During retorting, the meat will shrink due to water removal from the tissues on account of coagulation of muscle protein. The meat will appear like honeycomb on cooling that severely affects the consumer appeal of canned tuna. Proper icing and keeping the cold chain temperature prevent honeycomb formation.

Other consequences of improper icing are the proliferation of microbial organisms resulting in high bacterial load in finished product and formation of Total Volatile Bases Nitrogen (TVBN) which is an indicator of spoilage. Keeping the raw material temperature below 4° C till the fish is processed and maintaining the frozen fish at -18° C or below is of paramount importance in preventing such quality related issues.

C. On-board handling of tuna

On-board handling of tuna calls for specialized and unique handling techniques. Unlike other fishes, tunas are warm blooded organisms. This means that when the fish is kept in ice for chilling, the central nervous system (CNS) of the fish will still be active and in order to maintain the body temperature constant, temperature at the core of the fish will rise substantially. As a result, icing will

serve only to reduce the surface body temperature while the internal temperature will remain high. Consequently, the meat at the core of the fish will be of inferior quality with flesh colour severely impaired. This kind of raw material is not suitable for further processing into value-added products. Raw material for making value-added tuna products requires special handling on-board fishing vessels. This includes stunning the fish immediately after capture with blow on the head between the eyes using a hammer so as to destroy the CNS. This is followed by inserting a spike into the soft spot on the head to stop the brain. Thereafter, the fish is eviscerated and de-gilled. The fish is then thoroughly cleaned and the belly cavity is filled with crushed ice. This results in rapid cooling of the fish to around 4º C. Tuna gilled and gutted in this manner will yield flesh of good quality suitable for further processing into various value-added products.

2. **Issues related to sustainability**

A. Capture of juvenile tuna

India exports huge volume of juvenile yellow fin tuna in the size range of 2-10 kg and trade of juvenile tuna adversely affects the growth and abundance of the stock. Our neighbouring countries such as Sri Lanka and Maldives have imposed ban on the capture and sales of tuna below 15 kg. Yellow fin tuna on maturity attains a size of 45-40 kg. Therefore, there is an urgent need to restrict the capture and sale of baby tuna in India also. Tuna belongs to the category of highly migratory species (HMS), capable of undertaking trans-boundary migrations. This implies that the stock is shared by more than one country in a given geographical region. Any conservation measure should be implemented on a regional level for such measures to become fruitful.

B. **Accidental capture of marine mammals and seabirds**

Accidental catch of marine mammals in gill nets and purse-seine and sea birds in tuna long lines is an environmental issue related to tuna fishing. There exists a curious relationship between tuna and dolphin as they always swim together with dolphins on the sea surface and shoals of tuna beneath them. This strange association makes dolphins easy targets in tuna gill nets and purse-seines. Many studies have revealed the entanglement of dolphins in gill nets and purse-seines used for catching tuna. Therefore, the use of gill nets and purse- seines should not be encouraged for tuna fishing. Earth Island Institute (EII), an environmental NGO has introduced an ecolabel called Dolphin Safe Tuna. The Dolphin Safe Certification is an important requirement for export of tuna to countries like EU, Thailand, Tunisia and Vietnam that ensures capture of tuna by a method not deleterious to dolphins.

Conclusion

Though India has been exporting tuna for the past two decades, product development has not kept pace. Yellow fin tuna is an item with tremendous

possibilities for value addition. Products like tuna loins, block, steaks, Saku and cubes are only a few among them. While processing these products, a number of byproducts are obtained such as tuna belly, minced meat called Nakauchi, cut meat, dark meat, tuna head, eye and cheek meat. In short, practically every part of the fish can be used commercially. In order to popularize exploitation of our rich tuna resources in a sustainable and scientific way, the government should initiate management measures like Ecolabelling by Marine Stewardship Council (MSC) and Dolphin Safe Certification. Government should incentivize the development and export of value-added tuna products to provide fillip to tuna trade.

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T N Venugopalan is a seafood professional and has spent most of his career in seafood export trade. He has a rich experience of over 35 years in the field and played a significant role in developing and exporting value-added Tuna products from India. He also held various positions in different seafood exporting companies. Currently, he is working as the Business Development Manager of Cochin Frozen Food Export Pvt Ltd. He has worked previously in Amison Foods Ltd, Poyilakada Fisheries Pvt Ltd, Alapatt Marine Exports and RF Exports.