Dry Fish: Reliable Nutrition in Challenging Times

Mehul Patel[1*], Swaraj Adakney[1], Yash Khalasi[1], Ashutosh Danve[1] and Jhanvi Tandel[2]
[1] ICAR-Central Institute of Fisheries Education, Mumbai, Maharashtra, India
[2] Postgraduate Institute of Fisheries Education and Research, Kamdhenu University, Rajpur (Nava), Himmatnagar, Gujarat, India
*Corresponding Author: mehulpatel.cife@gmail.com

The drying method is considered the least expensive method of fish preservation (Balachandran, 2001). Drying of different species is the most primitive and oldest method for preserving fish and is traditionally practiced in the world (Payra *et al.,* 2016 & Balachandan *et al.*, 2013). The dry fish sector (Production and marketing) is crucial in creating jobs and improving public health. Notably, women have been extensively involved in the curing, processing, and marketing dry fish, contributing to their empowerment and economic independence (CMFRI, 2010).

In the face of ongoing food security challenges, dry fish has emerged as a reliable source of nutrition. Its long shelf life and preservation of essential nutrients make it an invaluable food source, particularly during challenging times when fresh fish may be scarce or inaccessible. Dry fish offers a practical solution for communities in regions with limited resources, allowing them to meet their nutritional needs sustainably.

Nutritional value and preservation

Dry fish is nutritionally rich, offering high-quality proteins, healthy fatty acids like omega-3s (EPA and DHA), and essential nutrients like iodine, zinc, copper, selenium, and calcium. It provides a gastronomically nourishing experience with high protein content and fewer calories than animal meat, making it a delicious and healthy choice. (Siddhnath *et al*., 2022)

Dried fish products are favored for their taste, flavor, and high content of (n-3) polyunsaturated fatty acids, which offer various health benefits. Dried fish provides health benefits by reducing stroke risk, lowering triacylglycerol levels, regulating blood pressure, and influencing glucose metabolism. It is a valuable protein source that contributes to balanced health and serves as an essential protein intake in countries with low cholesterol levels and rich nutrient profiles. (Rasul *et al*., 2021)

It provides a concentrated dose of nutrients to support overall health, especially when fresh seafood is scarce or inaccessible. In the country, poor people take advantage of dry fish as a cost-effective protein source in their nutritious food (Reza *et al.* 2005). It was reported that dry fish contain more amino acids than eggs (Paul *et al.*, 2018).

Preservation techniques

Drying is a simple and oldest method of fish preservation that relies on the sun and wind (Balachandran, 2001). Additionally, artificial dehydration techniques have been developed. These methods remove water from the fish, leading to shrinkage and irreversible changes that alter the properties of the dried fish compared to its original state. (Murali2 S, 2017).

Different preservation methods, including drying, salting, chilling, freezing, and smoking, prevent microbial spoilage and maintain nutrient quality for year-round storage. Among these techniques, drying is the most commonly utilized method for fish processing and preservation in developing nations. This traditional approach

ensures long-term storage while preserving the nutritional value of the fish (Banna *et al*., 2022). These techniques not only extend the shelf life of fish but also enhance its flavor and texture. Preservation also permits the smoothing of seasonal fluctuations in the abundance and scarcity of fish throughout the year (Belton *et al*., 2022). These preservation techniques ensure that dry fish remains a reliable and nutritious food source even during challenging times.

Long shelf life and accessibility

Fresh fish's poor handling and storage practices often lead to rapid postharvest deterioration, resulting in limited availability. These challenges meeting the market demand for fish and its nutritional benefits. However, dried fish offers a solution to this problem.

One of the critical advantages of dry fish is its extended shelf life. Unlike fresh fish, which can spoil quickly, dry fish can remain edible for an extended period. This characteristic is precious in regions with limited access to fresh fish, such as remote coastal areas or landlocked communities. By preserving fish through drying, communities can overcome the limitations imposed by geography and ensure a stable supply of nutritious food (Banna *et al*., 2022).

Furthermore, dry fish does not require expensive storage facilities. Unlike fresh fish, which necessitates refrigeration or freezing to prevent spoilage, dried fish can be stored at room temperature.

Dry fish offers a high nutritional value, extended shelf life, and doesn't require expensive storage facilities. It is a practical solution for communities in challenging circumstances, ensuring accessibility to reliable nutrition (Immaculate *et al*., 2013).

Dry fish as a solution in challenging times

Fish is vital in the daily diet, and it contains a good source of protein. It is a crucial dish in the diet, with many food items as a flavoring agent (Soumyadip *et al*., 2018). Dried fish has a significant source of micronutrients in an Indian meal, and it plays crucial in the fight against malnutrition and other health problems in developing South Asian countries like India (Siddhanth *et al*., 2022).

During the monsoon season, when fishing is prohibited, dry fish becomes highly sought after in the market due to the absence of fresh fish supplies, highlighting its historical significance in offering sustenance during scarcity or restricted access to fresh seafood. (Das *et al*., 2013).

The COVID-19 pandemic exposed the linkages between globalization, economic vulnerabilities, and essential food provision. As a portable and affordable source, dried fish is crucial in ensuring food security, sustaining livelihoods and addressing nutritional needs, highlighting the significance of supporting small-scale dried fish market chains. Additionally, due to the prevailing COVID-19 pandemic situation in recent years, the demand for shelf-stable dried fish products has spiked in households as it is a non-perishable food item (Mandal *et al*., 2021; Jayasekara *et al*., 2022). During monsoon season, crises, such as natural disasters, conflicts, or disruptions in the food supply chain, dry fish has proven to be a reliable source of nutrition.

While dried fish presents a valuable source of nutrition and plays a crucial role in addressing health and food security challenges, its economy encounters sustainability issues. Addressing labor exploitation, improving sanitary conditions, ensuring ecological integrity, managing resource allocation, and enhancing governance are essential for a sustainable and resilient dried fish industry (Belton *et al*., 2022). Dry fish is crucial during

emergencies as it offers a stable food source that can be stored for a long time without refrigeration. It helps combat food shortages and ensures the availability of nutritious meals during challenging times.

Conclusion

Dry fish has emerged as a reliable and accessible source of nutrition, offering a long shelf life and high nutritional value. Its preservation techniques, including drying, salting, chilling, freezing, and smoking, ensure the maintenance of essential nutrients year-round. The cost-effective drying method, widely practiced in the dry fish sector, contributes to job creation and improved public health. Dry fish is a practical solution during food scarcity or limited access to fresh seafood. It can overcome geographical limitations, providing sustenance in remote coastal areas and landlocked regions. The COVID-19 pandemic has further highlighted its importance in ensuring food security and sustaining livelihoods. However, ensuring the sustainability of the dried fish industry requires addressing issues such as labor exploitation, sanitary conditions, ecological integrity, resource management, and governance. By addressing these challenges, the dry fish sector can continue to provide a stable source of nutrition, combating food shortages and supporting the availability of nutritious meals during challenging times.

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