

Fish Based Paneer and Surimi Based Products

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Abstract

India is one of the most important fish consumers, with a growing demand for fish consumption, which makes it imperative to develop technologies to valorize low value fish for human consumption. The waste of high value fish protein originated from underutilized fish needs to be considered for converting it into surimi-based products with little changes in the recipe so as to suit the taste of seafood consuming population in India. Fish Based paneer products are proteineous product prepared from low valued white fleshed fish. Minced fish meat is washed three times to remove the sarcoplasmic proteins, pigments and other extraneous matter. The myofibrillar proteins were mixed with the cryoprotectants and incubated at 40°C, followed by steam cooking at 95°C for 15 minutes. The product is then cut into desired blocks, trimmed and vacuum packed in 3 ply laminates. The fish based paneer products can be held in frozen condition for 6 months. Fish based paneer products are colourless, odourless protein products having gel consistency. They serve as ready-to-cook products, which can be further used for the preparation of different gravies, battered and breaded products.

Keywords: Fish Based Paneer Products; Surimi Based Products

Introduction

Marine and freshwater fishes are the popular foods consumed in Asia, because of its abundance and wide acceptance by most consumers [1]. However, only selective species of fish are generally used for human consumption [1]. The technology for processing of low value fish for better utility is of interest and important to many countries, which have large fish resources. Technologies have been developed for the use of these low value fish in making surimi, a highly functional material, it can be fabricated into imitation seafood products such as crab sticks and legs, shrimp analogs, lobster tails and scallop analogs [2]. In India, large quantities of low value fish amounting to about 30% of the total marine catch are not properly utilized. The present consumption pattern of restructured fishery products is insignificant because of the non-availability of such products in the Indian seafood industry. In this chapter, we will discuss the new insights into developing novel value added seafoods.

Surimi

Surimi is a Japanese term originally meaning the “ground fish meat paste” formed during the manufacturing process of the traditional Japanese Surimi based products. Surimi based products are proteineous product prepared from low valued white fleshed fish. Minced

fish meat is washed three times to remove the water-soluble proteins, pigments and other extraneous matter. The salt soluble proteins (myofibrillar proteins) are mixed with the cryoprotectants such as sucrose, sorbitol, polyphosphate and salt and then packed in plastic bags of required weight. The meat along with additives is frozen and stored at -20°C.

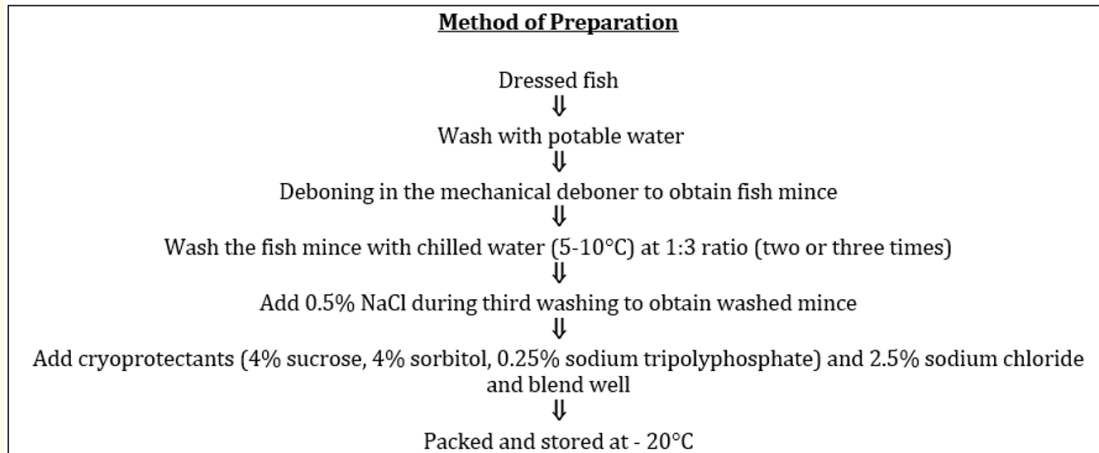


Figure 1: Method of preparation.

Surimi based products

The traditional surimi products of Japan are: Chikuwa - tube shaped fish paste, Kamaboko - boiled fish paste, satsumage - fried fish paste, hampen - floating type boiled fish paste. Diversified traditional products like kanikam (artificial crab leg), hampen cheese sandwiched hampen, easy to eat kamaboko, satsumage with hampen taste, squid surimi kamaboko are also being marketed in Japan.

Colour	White - greyish
Moisture	72 - 83%
pH	6.8 - 7.2
Protein content	16 - 19%
Fat	0.5%
Ash	0.5%

Table 1: Nutritional value of surimi.

Kamaboko

Highly processed paste of white fish produces kamaboko, minced surimi is mixed with various texture and flavour enhancing ingredients such as starch, egg white, water, monosodium glutamate and other, real or artificial, flavourings and artificial colours, formed into semi-cylindrical slabs or other shapes and cooked by steaming until firm. The resulting product is then served sliced hot or cold as it is or mixed it with various dishes.

Crumbed bites

A great delicious seafood snack made from a surimi base with scallop flavouring. Major ingredients of bites are surimi, starch, salt, sugar, monosodium glutamate, batter bread crump and water and consumed after deep frying in refined oil for 3minutes at 180°C. Crumb bites are packed in moulded trays and kept under frozen bellow -18°C.

Crab stick

Crab stick is manufactured by using surimi and it is mixed with various textures and flavour enhancing ingredients such as tapioca starch, potato starch, corn starch, red wine, egg white, water, monosodium glutamate and other real or artificial flavours, extracts and colours formed into cylindrical shape and pasteurized by the process of cooking. The resulting product is then stored under IQF condition and consumed as a starter/snacks by mixing with various dishes.

Crumbed seafood sticks

Crumbed seafood sticks are made with surimi-based material. Crab stick mixed with various texture and flavour enhancing ingredients coated with battering and bread crump are known as crumbed seafood sticks. It is sold in the market in IQF condition. A very popular seafood snacks and consumed after frying.

Crab claw

Major ingredients of crab claw are Surimi (processed white fish protein), water, starch, egg white, sugar, salt, crab flavour, crab pincer and batter and bread crumb. It Is manufactured mechanically using moulded line. Individual crab claw weight is 33.5 ± 0.2 m and available in the IQF condition with 250g pack. Crab claws are more popular and they are consumed after frying for 3 - 4 minutes at 180°C.

Surimi unbreaded scallops

Unbreaded surimi scallops are prepared from processed white fish protein, water, starch, egg white, sugar, Salt, vegetable oil, scallop flavour without batter and bread crumb. Packed in the polythene bags of size 250g. IQF Packing size: 40 ± 0.2 cm diameter, 2.0 ± 0.2 cm thickness, 20.5 ± 0.5 g/piece.

Surimi breaded scallops

Surimi breaded scallops are prepared from surimi. Surimi is mixed with other food ingredients and prepared mechanically by using mould line or manually. Frozen scallops are battered and breaded and consumed after deep frying in edible oil. Individual weight is 40g and packed in the moulded trays. Each pack weigh is 250g.

Imitated shrimp

Major ingredient for imitated shrimps is unbreaded surimi white fish protein (surimi) water, starch, egg white, sugar, salt, vegetable oil, shrimp flavour. Packed in polythene bags of size 250g. Solid in IQF condition. Weight of individual imitated shrimp is 25 ± 1.0 g. Thickness = 1.0 ± 0.2 cm, packing 500g. Consumed after deep frying fry 170°C, 3 - 4 minutes.

Imitated breaded shrimp

Ingredients used for manufacturing breaded shrimp are surimi, starch, edible oil, soy protein, sugar, salt, shrimp flavour, sesame oil, white pepper, batter and bread crumb. Shrimps are preserved with IQF shrimps. Weight of individual imitated breaded shrimp is 25 ± 1.0 g. Thickness = 1.0 ± 0.2 cm, packing 500g. Consumed after deep frying at 170°C, 3 - 4 minutes.

Breaded fish finger with corn

Major ingredient used for fish fingers is surimi, starch, edible oil, soy protein, sugar, salt, corn, white pepper, bread crumb, and batter. Fish fingers sold in IQF condition and individual weight is 25.0 ± 1.0 g. Size diameter 7.0 ± 0.3 cm and thickness of coating is 1.0 ± 0.2 cm. Fish fingers are sold in pack 500g. Consumed after deep frying in edible oil at 170°C , 3 - 4 minutes.

Surimi scallops

Breaded and unbreaded surimi scallops are prepared from fish protein, water, starch, egg white, sugar, salt and the most important among all is scallop flavour. They are packed in polythene bags of size 250g IQF packing size: 40 ± 0.2 cm dia, 20 ± 0.2 cm thickness, 20.5 ± 0.5 g/piece.

Lobster tail

Fish surimi, water, starch, egg white, sugar, salt, vegetable oil, food colour and lobster flavour are used to prepare lobster tail. It is consumed by frying it in vegetable oil.

Potential uses of surimi for diversified products

Pasta

Surimi's water binding and elastic properties and bland taste make it ideal as a protein supplement in pasta.

Pet foods

Surimi's functionality is very useful in formed or extruded products such as intermediate moisture pet foods.

Bakery products

The water binding property of surimi is very useful to control freeze thaw stabilization of icings and filling in bakery items.

Restructured products

Dried surimi or frozen surimi can function as a glue type binder to hold chunks of meat together.

In sausages

It functions as a better protein binder in sausages in place of traditional binders like alginates or vegetable protein.

In health foods

Surimi has recently found application as an ingredient high protein drink powders and high fibre snack bars [3-5].

Conclusion

The present status of surimi and surimi-based product contribution less than 10% export by volume of India. Hence there is more scope to increase the production of surimi- based value -added product and to earn valuable foreign exchange.

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