Surimi

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Abstract – Since ancient times, seafood has been consumed in different ways. Surimi technology, which is one of the evaluation methods of seafood, has an important place in the production of new products by using different technological processes in developed countries. Surimi is a Japanese word meaning kneaded fish meat that is processed in different ways and has unique properties. Surimi is semi-processed, frozen, washed and stabilized fish mince. Surimi, which literally means minced meat in Japanese; It is a product obtained by mixing the mechanically deboned fish meat, after being washed with water and minced, with thickeners such as sugar, sorbitol and polyphosphate and preservatives from freezing denaturation (cryoprotectant) to ensure a good shelf life as frozen. described as a concentrate. Surimi-based products are products obtained by creating a texture and shaping similar to shellfish products such as crab legs, lobster tails, scallops and shrimps, of surimi, which is a semi-processed minced meat material. Surimi has an important potential as a functional protein source compared to other animal and vegetable proteins. In this review, the history of surimi, the types used in surimi, the production of surimi, and information about the products obtained will be discussed.

Keywords – Surimi, Production, Technology

I. INTRODUCTION

Surimi technology is not new. XVI. century, surimi-based products were known as chikuwa in Japan. The Japanese used this technique to preserve fish in traditional ways. Frozen surimi production started in 1960 in Japan, and new techniques and machines were developed. With the development of new methods, techniques and machines, surimi production increased, surimi production factories were further enlarged and production systems were changed [1].

Surimi is a product that can be produced fresh both on land and at sea by factory ships, first by using traditional methods and then updated. It can be used alone, but also as an intermediate product where the remaining parts of factory-processed seafood such as crab legs and parts are evaluated. When used in this way, unlike soy proteins, it creates an elastic texture due to its high myofibrillar protein concentration. Because of this feature, surimi has been used in the creation and development of new fabricated products in Japan for many years [2].

Hunting potential and economy are of great importance in determining the species to be used in surimi production. Surimi, a protein product with a neutral taste and aroma, is a product that is not liked much, has low economic value, and is evaluated by processing fish directly or by processing into various products. Classically located in the Northeast Pacific and the Bering Sea, Alaska Pollak is used by the Japanese. In the production of surimi, fish with white meat, high gel capacity, which can be caught easily and in large quantities are preferred. Black-fleshed fish usually have a low percentage of myofibrillar protein and are difficult to separate. In addition, they are easily

rancid due to the high level of oil they contain. Gel durability is high in marine fish and especially in white-fleshed (lean) fish, and fish such as cod, haddock, barlam, sea bream, coral and bream are used [3-5].

II. SURIMI PRODUCTS

Surimi, a semi-processed minced meat material, is widely used in the production of ready-to-eat products. After thawing, fresh or frozen surimi can be processed as an additive to various products or directly into some products. Sausages, cakes, meatballs, loaves and burgers made of surimi are consumed in many countries. Although their structures vary according to cultural preferences, most of these products are the most suitable products for minced fish [6].

90% of surimi-based products are fish products called kamaboko, and less than 10% are fish sausages, fish ham and fish burgers. Imitation crab and other surimi-based shellfish are also considered kamaboko [6].

Surimi-based products are as follows [2-7]: Steaming Products: Steaming products are kamaboko, imitation products, hanpen and naruto. A typical steam-cooked kamaboko is called "itatsuki kamaboko". Imitation products are imitation products of surimi paste with the same taste and flavor of crab legs, shrimp, oysters and similar sea animals. Hanpen is produced by steaming surimi after mixing Japanese sweet potatoes and other ingredients. Another surimi-based product prepared by steaming is naruto.

Frying Products: The fried products of surimi are tempura and satsumaage. Tempura is produced by coating and frying shellfish, small fish and pieces of vegetables. Today, tempura is a classic food of the Japanese people.

Grilled Products: Chikuwa differs from kamaboko with its hollow and cylindrical shape. It is obtained by frying surimi and other additives after mixing.

Other Products: Other products derived from surimi are fish ham and fish sausage.

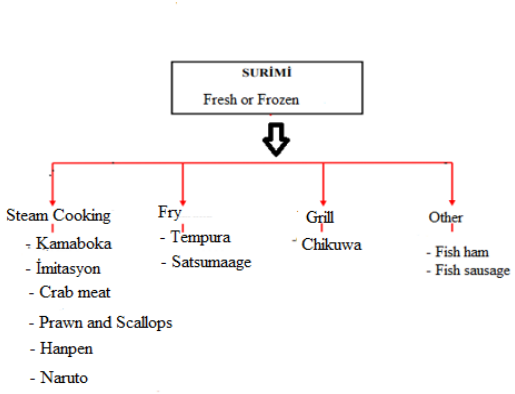

Fig. 1 Surimi-based products [2].

III. SURIMI PRODUCTION TECHNOLOGY

The characteristics of the product to be processed in surimi vary depending on the type of fish and the season of fishing. In order to produce the same high quality surimi all the time, the raw material properties must be well known [8].

All types of fish are suitable for making surimi. Ideally, the fish should have good gel formations. Thus, ideal flexible texture, taste and white appearance can be obtained. The quality of dough products; evaluated by brightness, taste and supple texture. Industrially, raw fish material should be both abundant and low in price [9-11].

The washing process varies depending on the type of fish, the desired quality and the type of washing. In recent years, new mechanisms that perform the washing process under vacuum have been studied. With the applied vacuum, the cells are fragmented and therefore the extraction is increased. Washing is done at least 2 times, on average 3 times [12].

After the washing process, water is removed in screw presses. At this stage, the fish meat is white and odorless, free of scales, bones and skin fragments [8].

After shredding, washing, straining and pressing, the meat is mixed in a blender first without additives to gain a more uniform structure, and then by adding 2-3% salt to facilitate protein denaturation and ensure gel formation. Finally, necessary additives are added to the prepared surimi dough in appropriate amounts [6].

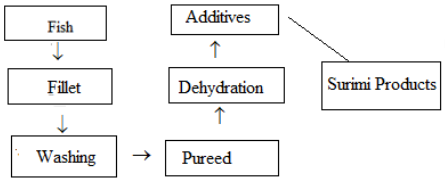

Fig. 2 Surimi production [13].

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