Fish, Comminuted, Deboned, and Minced

Revised 2008

Storage Life of Comminuted Fish

Mechanical removal of fish flesh from skinned bones of fish started in Japan approximately 45 years ago. In the U.S., the use of meat/bone separator technology began some 20 years ago. The largest portion of minced fish used in the U.S. is imported as frozen blocks from the Russian Federation, China, and Canada. Most U.S. fish processors use trimmings from their filleting lines as the source of raw material for their minced fish. Some companies use underutilized fish species or fish that are too small in size or have an excessive number of bones for conventional processing techniques to handle.

The fish flesh produced by mechanical deboning is equally as nutritious as that produced by the more conventional methods. Its low fat and high protein content make it as wholesome as beef and may be somewhat more healthful due to the lower quantity and higher degree of unsaturation of its fats.

Minced fish is becoming more available as technology in deboning and product fabrication is improving. Because of the additional handling, disruption of cellular integrity, increase in surface area exposed to oxygen, etc., shelf life of minced fish is usually reduced substantially, unless antioxidants and/or exceptionally good packaging are used. In general, it may be assumed that minced fillets will have a frozen shelf life about one-third that of intact fillets, and one-third of that if the minced fish is recovered from fish frames during deboning. Thus, for example, if frozen fish fillets have a shelf life of 9 months, the minced fillet shelf life will be reduced to about 3 months, and that recovered from frames, a little more than 1 month. Minced fish produced from certain gadoid fish, particularly hakes and Alaska Pollack, is prone to becoming rubbery during frozen storage due to enzymatic reactions; this condition may be mitigated by holding at lower than normal storage temperatures. Some stabilization of the functional properties of frozen minced fish can be achieved by washing the mince and incorporating additives such as sugar, sorbitol, and polyphosphates. This product is known as Surimi and is the base material for manufacturing Kamaboko-type products or simulated seafood.

Mechanically deboned fish is very versatile in that a large variety of highly acceptable products can be prepared. Since mincing removes species recognition by visual techniques, just about any edible species of fish can be used alone or in combination to produce the most desirable product. However, it is not desirable to mix the mince of certain gadoid fish such as the hakes (which are prone to develop a tough rubbery texture during frozen storage) with other trouble-free species, since the agent responsible for the textural change will be incorporated into the mix.

Mixtures of shellfish and minced finfish have been used to prepare delicious seafood products. In addition, on an experimental basis, comminuted fish has been added to beef products such as hot dogs and meat loaves for use as appetizers and entrees.

The expected storage life of minced fish would be about one-third that of frozen fillets from the same species at the same temperature, since the storage life at a specific temperature would vary greatly with the species and the processing and packaging. It is recommended that studies be carried out on specific new products before placing them into commercial distribution.

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