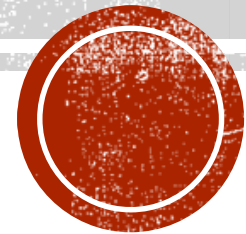


# SURIMI TECHNOLOGY



## **SURIMI**

Surimi is a refined form of mechanically deboned fish meat that has unique functional characteristics including gel-forming ability, water and oil binding properties, which make it a valuable ingredient in a broad range of food products. Surimi processing technology involves the washing of minced fish in order to purify and concentrate the muscle proteins which may be then further processed into secondary products or stabilized by the addition of cryoprotectants, frozen and stored for later use.

The techniques for making surimi-based '**Kamaboko**' products were first developed around the year AD 1100 when Japanese fishermen discovered that fish meat which had been washed, mixed with salt, ground and then cooked by steaming or boiling kept longer than traditionally prepared seafoods.

Historically, the surimi has focussed largely on the Pacific (Alaska) pollock resource. Hoki, cod, hake and whiting have also been used by commercial surimi manufacturing enterprises. Sardines, mackerel, menhaden, herring, pink salmon and capelin are considered promising resources of fatty fish for surimi processing.



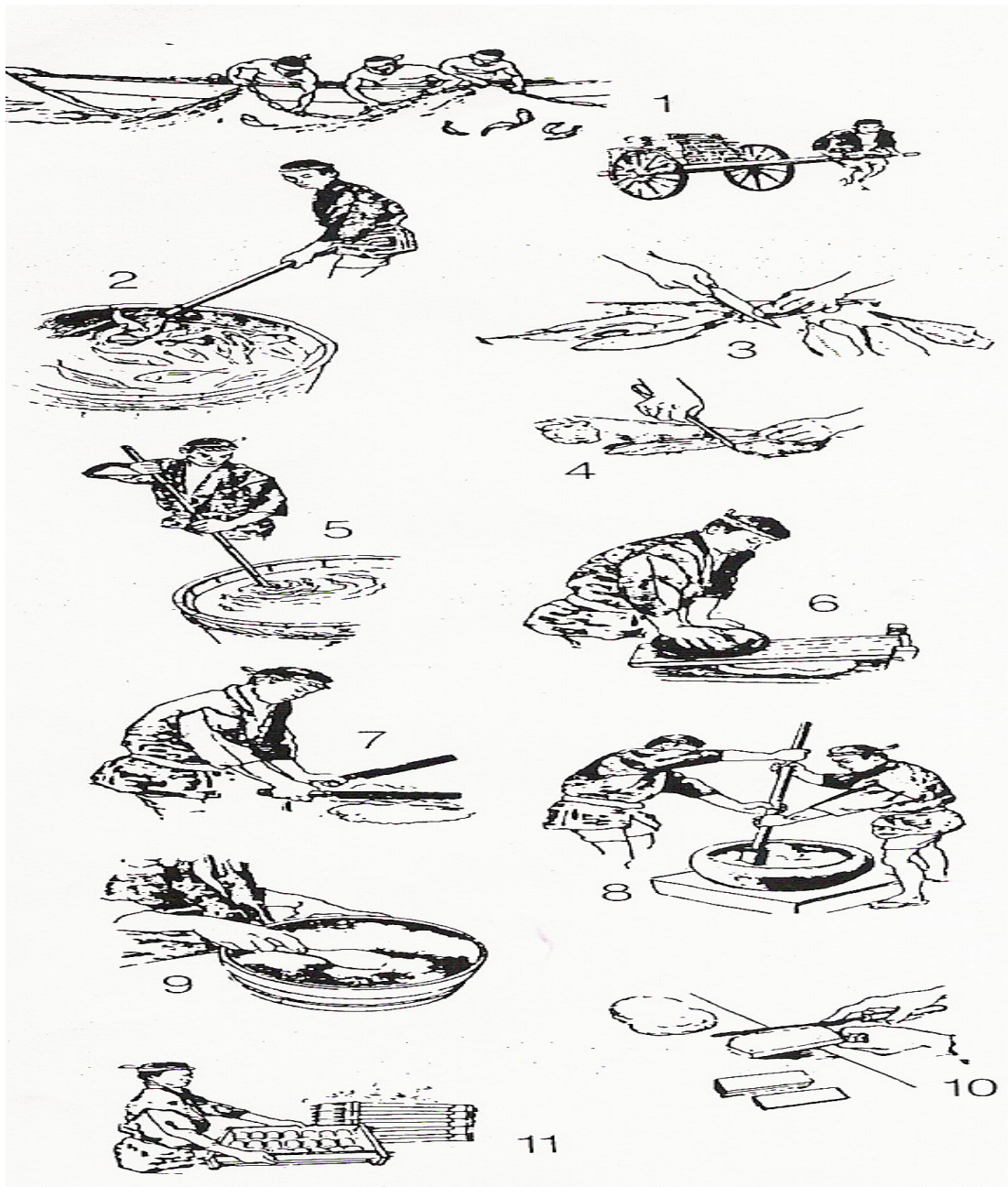


Figure 1. An old school surimi and kamaboko preparing process

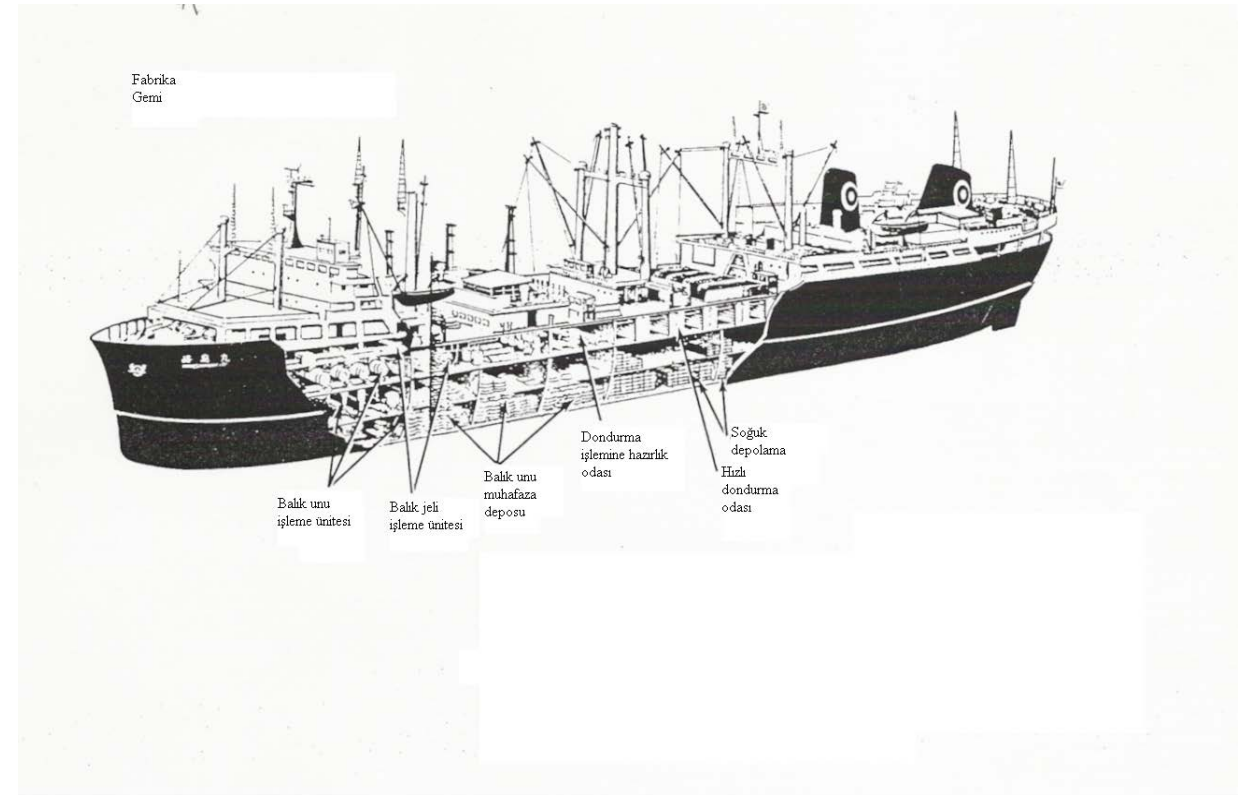


Figure 2. Surimi processing ship



## Commercial Surimi Production

Both continuous and batch style processing methods are currently used in manufacturing surimi. The basic steps in surimi manufacturing are: preparation of the raw material, i.e. Heading and gutting or filleting; mechanical deboning or mincing; washing of the mince to extract water soluble proteins, lipid, pigments, enzymes and other undesired fractions; refining to remove small skin and bone fragments and other impurities; water removal from the mince by either pressing or centrifugation; incorporation of cryoprotectants such as sugar, sorbitol and sodium tripolyphosphate; packaging; freezing and frozen storage.



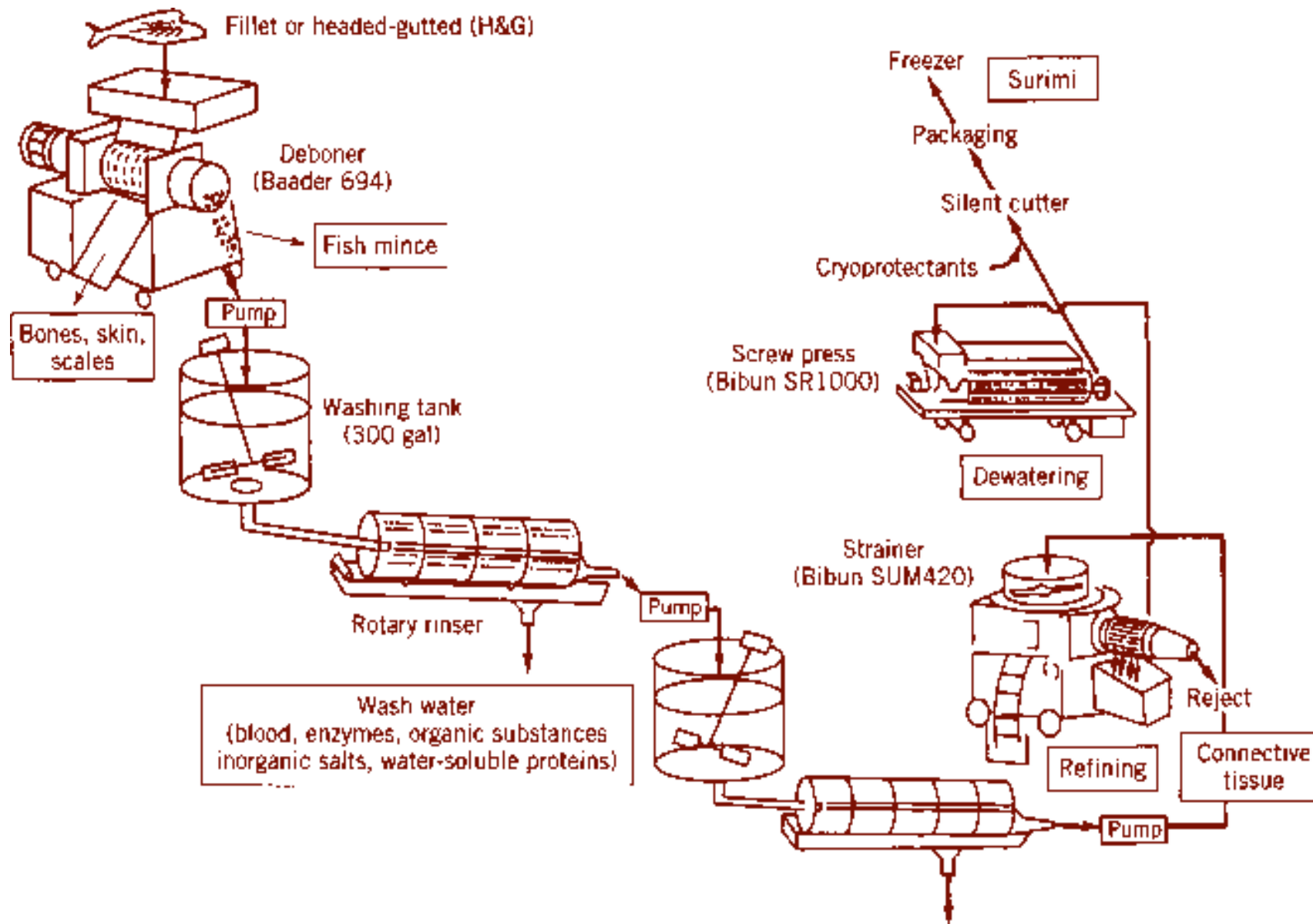


Figure 3. Commercial Surimi Production





# The production of surimi from dark-fleshed fish...(1)

## Japon Surimi Association (JSA) Method

This method, developed by the Japan Surimi Association (JSA), is intended to allow maximum utilization of the existing surimi production facilities built for Alaska pollock. The product resulting from this method has numerous advantages, among them inexpensive production facilities, high productivity, high yields, and good taste. Since the product is suitable as the material for fried kamaboko, broiled kamaboko, and fish sausage, commercial-scale production using the JSA method has already been launched in some areas. Disadvantages of the surimi manufactured by the JSA method lie in its dark appearance, weak gel-strength and fishy odor, as the mechanical fish dressing procedure and the subsequent processing procedures employed in the JSA method are unable to completely remove dark muscle tissues of the fish.



# The production of surimi from dark-fleshed fish...(2)

## Jet Method



This method, developed jointly by Chiba Prefecture and Kyokuyo Fisheries Company, features a special meat separation procedure in which light muscle tissue is separated from the rest of the fillet with the aid of a high-pressure jet. The jet also provides some degree of leaching. The method almost completely removes the dark muscle tissue and fat from the product, giving it a white appearance and high gel strength with an almost complete lack of fishy odor. Disadvantages of the method are the expensive facilities, low yield, and relatively low productivity.



# Factors Affecting the Surimi Quality

*1. Gel Forming Ability*

*2. Raw Material Quality*

*3. Processing Factors*



Narutomaki



Royalcarib



Sushikko







Awabino-watano



Bakurai



Goldcavier



Hitashio-hotaro



Honkarasumi



Hoshiko

## Surimi Based Products



Ikashiokara



Kamaboko



Kazunoko



Konowata



Mushiuni



Namami