



TECHNICAL NOTE NO. 46 - METHOD FOR REMOVING BLOOD
FROM HALIBUT TO IMPROVE APPEARANCE OF FROZEN STEAKS

INTRODUCTION

The attractive appearance of fish steaks often is marred by blood stains. These stains are especially noticeable when frozen white meat, such as that of halibut, is thawed, but the stains also are evident even in the reddish-orange meat of salmon.

The blood causing most of this discoloration comes from the large blood vessel that runs down the length of the fish adjacent to the backbone. This blood can be observed readily if certain frozen halibut and salmon steaks are examined. When these steaks are thawed, an objectionable dark red stain usually is found in the meat surrounding the blood vessel. The drip, or free liquid released by the frozen meat as it thaws, also may be discolored red by the blood. These stains make the product much less appealing to the consumer.

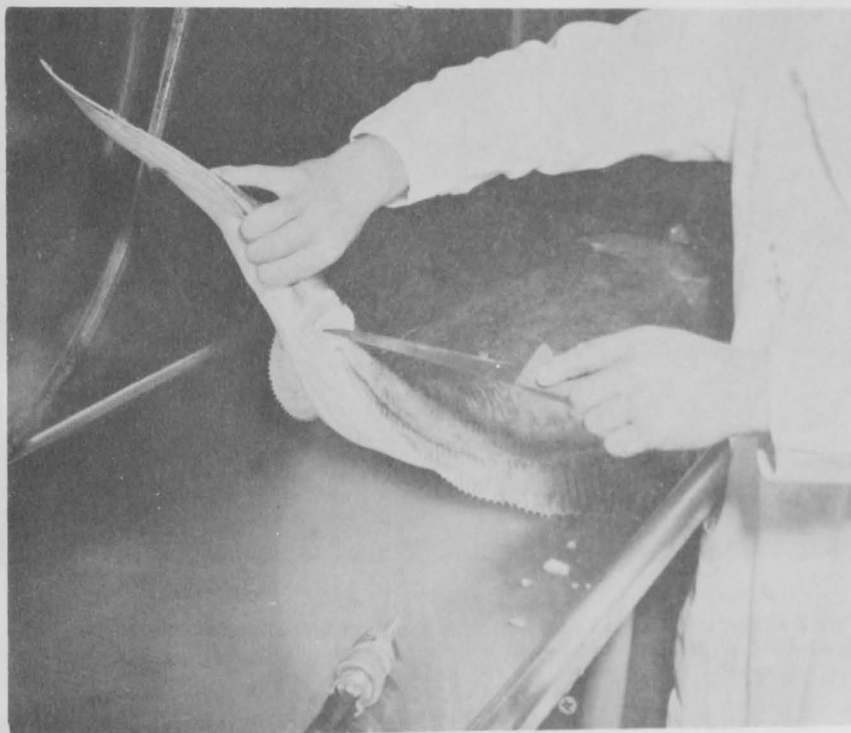


Fig. 1 - Piece of meat cut from tail section of a halibut to expose blood vessel. In commercial practice, the cut need only be large enough to allow water that is under pressure to flow through it.

This problem can be overcome by a simple procedure. The purpose of this paper is (1) to describe this procedure and (2) to report on its effectiveness.

PROCEDURE

While the belly cavity is being washed prior to freezing the fish, remove the blood as follows:

1. Make a small cut to expose the blood vessel at the tail (fig. 1).

2. Attach to a water hose an adapter that reduces the diameter of the water outlet to about $\frac{1}{4}$ inch (fig. 1).



Fig. 2 - Location of blood vessel in belly cavity of halibut. The knife is used here simply as a pointer, for the blood vessel already was exposed at the time the fish was eviscerated. In order that the opening to the blood vessel could be photographed, the belly wall was cut farther than is usual in commercial handling.

3. Insert the adapter into the opening of the blood vessel in the belly cavity (figs. 2 and 3).

4. Using a stream of water, flush the blood out through the cut in the tail section.

This procedure has been used only with halibut. It should be applicable, however, to other fish, such as the large salmon used in mild-curing, where it is desirable to get rid of all possible blood.

EFFECTIVENESS

We found that this simple operation could be carried out simultaneously with the washing of the belly cavity. Inasmuch as the industry already customarily washes the belly cavity of halibut prior to freezing them, the removal of the objectionable blood therefore requires very little additional time. Furthermore, this operation resulted in no loss of the edible portion of the halibut and did no damage to the edible meat.

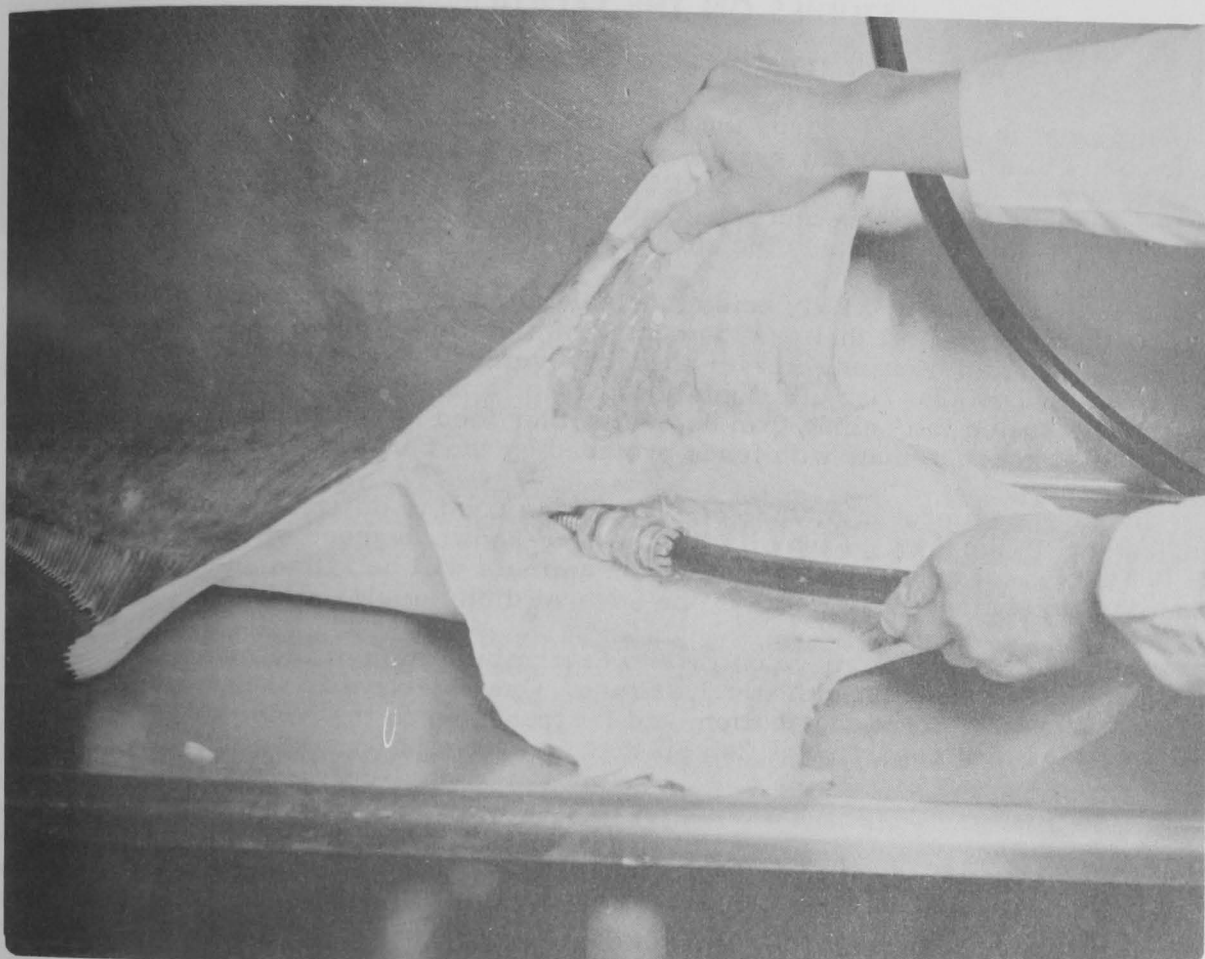


Fig. 3 - Method of inserting water cock into blood vessel.

When frozen steaks cut from halibut that had been experimentally washed were thawed and closely examined, none of the steaks were found to have blood stains.

CONCLUSIONS

A stream of water from a water hose can be used to remove the blood from the large blood vessel in the tail section of halibut. This method is rapid and simple; yet it effectively keeps blood stains from forming in halibut steaks.

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STUDIES ON THE RELATIONSHIP OF FISH OILS TO CIRCULATORY DISEASES INITIATED

A research project to study the relationship of fish oil in the diet to cholesterol deposits in the circulatory system of the body has been authorized by the U. S. Department of the Interior, Bureau of Commercial Fisheries. The research is expected to contribute to the fund of information being compiled on various phases of arteriosclerosis, particularly the coronary types.

It is the unsaturated fatty acids (unstable and susceptible to chemical change) which abound in fish oil that are the center of attention. Studies already made under the Saltonstall-Kennedy Act for the improvement of domestic commercial fisheries have shown that fish oils contain a greater amount and a greater diversity of these unsaturated fatty acids than do many other food fats. The current investigations are also being made with funds provided by the Saltonstall-Kennedy Act.

In one experiment miniature pigs are being used to determine the deposition of cholesterol in the body. Fish oil fatty acids of known degrees of unsaturation will be fed to the test animals. Ultimately the animals will be killed and the arteries examined to evaluate the effects of the several diets employed.

Another test will be made on rats to determine which of the many fish oil fatty acids are essential to physiological welfare. One objective is to determine the relationship of fish oils to metabolism and fat transport in the body, while still another is probing the properties of fish oil that may have pharmaceutical applications.



SALMON CLUB SANDWICHES

Canned salmon is a type of sandwich filling that is tasty and colorful and particularly appetizing. The flavor combines excellently with other foods and the texture is firm and moist.

Here is a special recipe for "Salmon Club Sandwiches" kitchen tested by the home economists of the U. S. Fish and Wildlife Service.

SALMON CLUB SANDWICHES

1 CAN (16 OUNCES) SALMON 3 TABLESPOONS CHOPPED CELERY 3 TABLESPOONS CHOPPED SWEET PICKLE 3 TABLESPOONS CHOPPED ONION	½ CUP MAYONNAISE OR SALAD DRESSING 18 SLICES BUTTERED BREAD 4 TOMATOES, SLICED 12 LETTUCE LEAVES
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Drain salmon. Flake. Combine with celery, sweet pickle, onion, and mayonnaise. Spread 6 slices of bread with salmon mixture; cover each with a second slice of bread and place tomatoes and lettuce on each; cover with remaining 6 slices of bread. Fasten sandwiches with toothpicks. Cut into quarters. Serves 6.