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BASIC FISHERY RESEARCH ON OXIDATION SHOWS REASONS FOR DETERIORATION OF QUALITY OF CERTAIN FOODS

Fundamental research on the effect of oxidation on fishery products has shown that the same basic mechanism involved in the discoloration of canned tuna is also involved in some forms of rancidity of fishery products as well as in the deterioration of some forms of fish meal, the Department of the Interior reports. The commercial fishing industry is already testing many of its processing practices to take advantage of these recent discoveries.

Technologists of the Bureau of Commercial Fisheries, United States Fish and Wildlife Service, believe also that the findings may have application in the meat industry and possibly in other food industries. The studies, which began in 1955, are being financed through Saltonstall-Kennedy funds. The work is being done at the technological laboratory of the Bureau of Commercial Fisheries, Seattle, Washington, and at the Food Technology Department and the Institute of Marine Resources, both at the University of California.

A number of significant findings have resulted from the basic research approach to the problem of oxidative deterioration. It has been proved that some forms of oxidative rancidity in the tissue of fish are accelerated by the presence of hematin. Hematin is the hydroxide form of the iron-bearing protein which comprises a portion of the respiratory protein, hemoglobin, commonly found in the red blood cells. The dark meat of fish which contains most of the hematin compound absorbs oxygen to a much greater extent than does the light meat. A series of tests amply demonstrated that the content of hematin is a major factor in determining the rate at which fish meals deteriorate.

Research conducted on the catalytic effects of hematin compounds on oxidation of fish oils has helped to clarify the process-induced problem of discoloration during the precooking of tuna. Previous to this work the chemical changes that resulted in "green" tuna were completely unknown. Preventive steps can now be taken prior to processing to inhibit its development.

Similarly, it was demonstrated that fish meals which deteriorated most rapidly were highest in their content of hematin compounds. Corrective measures now cut this rapid oxidation down to a fraction of its original rate.

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