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Gadus callarias L. - New Host for Ichthyosporidium hoferi

Preliminary Note

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A portion of the liver of a cod (Gadus callarias L.) was investigated. The cod, 155 cm long, was fished in July 1957 off Greenland - 67°26'N and 54°38'W (Subdivision 1B).

When this portion was viewed macroscopically after fixation with formaline, it did not show any special features. However, when taken from the fish, it did not present a normal appearance.

The microscopic examination revealed that the portion of liver contained a number of more or less spherical parasites with a diameter of 0.020-0.090 mm. These were at that time determined as "spores" of Ichthyosporidium hoferi or of a very closely related form.

All these forms are positive as to the Hotchkiss McManus coloration.

From examination of several sections of the liver in question, it appeared that in this case the infestation was not very strong. When working with sections 0.007 mm thick a density of 0.3 spores per 1 mm^2 was estimated. This is an abundance, which Sinderman and Scattergood (1954) term "rare".

For a large number of the "spores", the usual action of the host was observed, i.e. the formation of special tissues around the parasite, shutting it off from direct contact with the host; this reaction is, however, not found in all cases. There are certain forms which are in direct contact with the liver cells, but we cannot conclude that this is a sign of weak resistance on the part of the host. In the case where most of the "spores" are lodged in capsules of the host's tissue, the absence of a further reaction by the tissues can best be explained by assuring that there has not passed sufficient long time for the localization of the "spores" to make this reaction possible.

I have not observed necrose regions (necrosees).

This diagnosis is of interest as far as it for the first time (as the study of the literature available reveals) shows that cod can be infested by Ichthyosporidium. It also extends the distribution of the parasite as one finds this paraside in more and more species of fish, and when thus its area of distribution expands more and more, one is forced to consider the influence of this parasite on the populations of commercial fish.

In this connection one notes the great mortality of populations of herring in the Gulf of Maine and the Gulf of St. Lawrence - 70% infested on some fishing grounds in the Gulf of St. Lawrence, 1955 (Sinderman 1956), further that according to Reichenbach-Klinke (1958) the number of marine fishes from which ichthyosporidiosis is known amounts already to 38.

In spite of a number of important papers on this disease, several problems remain unsolved, in the biology of the parasite as well as in the epidemiology.

When comparing the symptoms of the disease as described in American and European papers, sufficient reasons are found for assuming that the symptoms vary for different host species or that the parasites, although closely related are not always exactly the same.

It is felt that it would be of interest to complete a systematic macro- and microscopic investigation aiming at achieving a survey of the frequency of this disease in the cod stocks in order that the identification of the parasite can be more precise and its endemic and epidemiological importance can be estimated.

BIBLIOGRAPHY

Reichenbach-Klinke, H. 1958 - Les parasites de la sardine (Sardina pilchardus Walb.) et de l'enchois (Engraulis encrasicholus Rond.). Com. Int. Expl. Sc. M. Med.- Rap. Proc. Verb. Reun. XIV : 351-353.

Sindermann, C. et Scattergood, L. 1954 - Diseases of fishes of Western North Atlantic. II. Ichthyosporidium disease of the sea herring (Clupea harengus) Maine Dept. Sea and Shore Fish. Res. Bull. 19:1-38.

Sindermann, Carl 1956 - Diseases of Fishes of the Western North Atlantic. IV. Fungus disease and resultant mortalities of herring in the Gulf of Saint Lawrence in 1955. Maine Dept. Sea and Shore Fish. Res. Bull. 25 : 1-21.

Sproston, Nora 1944 - Ichthyosporidium hoferi (Plehn and Mulsow, 1911) an internal fungoid parasite of the mackerel. Journ. Mar. Biol. Ass. U.K. 26: 72-98.

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