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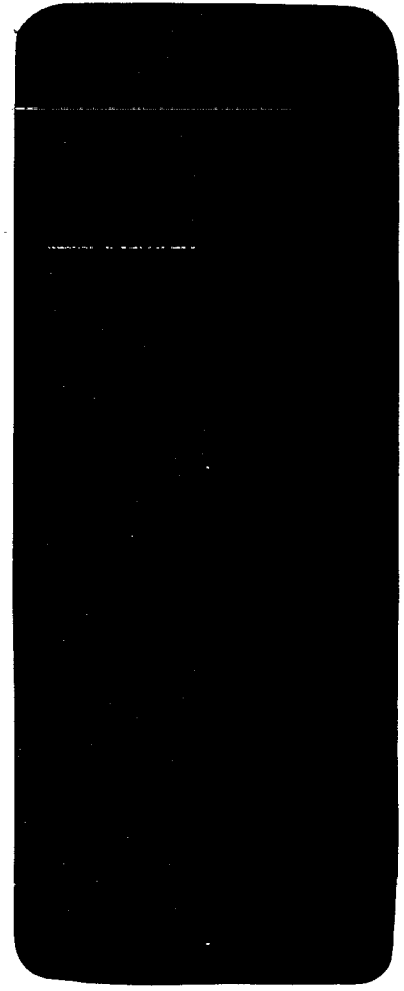

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PRELIMINARY STUDIES ON THE BLOOD OF SARDINELLA FROM THE WEST AFRICAN COAST

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SUMMARY

This report gives the preliminary results of blood group investigations on *Sardinella aurita* (C. V.) and *Sardinella eba* (C. V). Human blood and plant extracts were used for erythrocyte antigen detection. Serum protein polymorphism has been studied by starch gel electrophoresis and the transferrin has been identified by Fe 59 autoradiography.

Two species of Sardinella *(Clupeidae)* have an important commercial value on the West African coast: *Sardinella aurita* (C. V.) and *Sardinella eba* (C. V.). Morphometrical studies indicate that there are several different stocks from Senegal to Congo and we have entered upon serological investigations to identify these subpopulations.

The tropical conditions and the biology of *Clupidae* give special difficulties. The fish must be alive to be bled and the blood doesn't keep very well. The small quantity of blood drawn from the heart doesn't allow extensive absorption techniques.

We tried to detect red cell antigens and biochemical polymorphism in serum, hemoglobin and eye lens. In erythrocyte antigens' investigations we used chiefly human A B O system sera and seed extracts. The interpretation of agglutinations with human sera is very difficult on account of the occurence of a species heteroagglutinin anti-Sardinella. The results obtained with human typing sera absorbed with A and B erythrocytes, and with lecitins from *Phaseolus lunatus* and *Canavalia ensiformis*, indicate the likely occurence of A and B like antigens. No blood group has yet been established. (1) We did not find any natural isoagglutinin or heteroagglutinins against human erythrocytes. Using WA-23 reagent (2) no C antigen has been detected.

The amount of proteins in Sardinella's sera is 46 g/l. These sera have been analysed by means of paper, agar and starch gel electrophoresis. In *S. eba*, with agar medium, 3 principal and 2 secondary lipoproteins have been observed. The electrophoretic pattern reveals on an average 17 components in starch gel with Ashton's buffer. The region No. 8 has been identified to a *transferrin* by autoradiography (3). This transferrin, compared to human sera, has a beta mobility.

(1) Some facts could be directly used. For instance 30% erythrocytes from *S. eba* caught in April 1968 in Abidjan were not agglutinable with human typing sera.

(2) This reagent is a heteroimmune serum produced in the fish *Caulolatilus princeps* by immunization with red cells from the anchovy *Engraulis mordax*. It detects the C antigen on the erythrocytes of Californian Sardine.

(3) The revelation of transferrins by autoradiography has been carried out in the Laboratory of Immunochemistry in the Centre de Transfusion Sanguine de Paris. No polymorphism has been suggested in the transferrins but we expect to find a biochemical polymorphism with the band No. 9 where 4 components A, B, C, D have been detected.

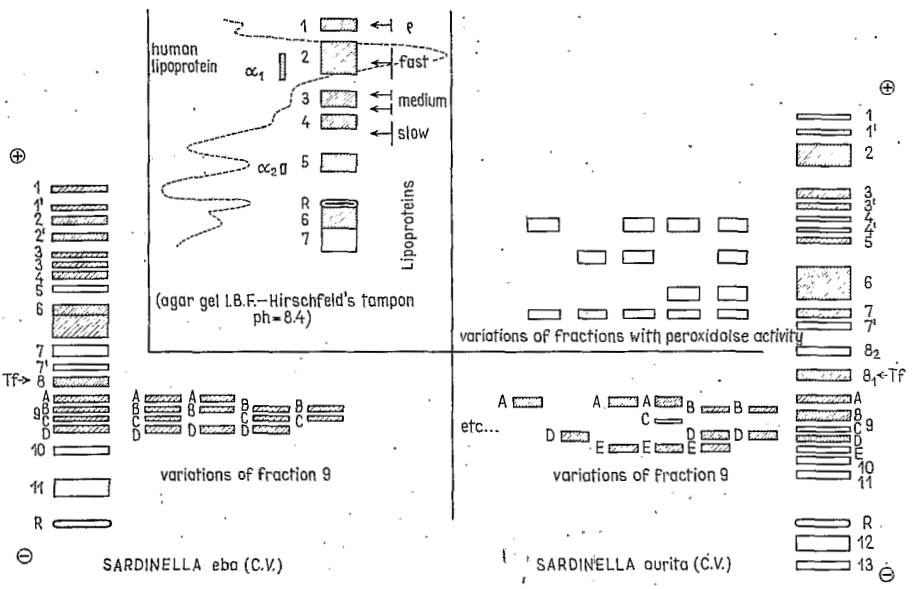

FIG. 1. Diagrammatical illustration of electrophoretograms in sera of Sardinelles (13% starch gel – Ashton buffer ph 7.9).

In *S. aurita* there are on an average 17 components in the serum; this serum can be easily distinguished from the serum of *S. eba* on the basis of the different pattern of the fraction No. 2 (1 band for *S. aurita* and 2 bands for *S. eba*). Variability has been observed with the fractions revealed by benzidin reagent (from 2 to 4 fractions). The transferrin (fraction No. 8) is not polymorphic but seems to have faster migrating subunits. At the level of the fraction No. 9 the bands show different patterns.

No polymorphism has been observed in the hemoglobin of Sardinella. In *S. eba* 2 components giving one precipitation band with hetero-immune sera have been observed.

Preliminary studies on eye lens extracts have been carried out. We got 10 fractions by electrophoresis in agar medium and 7 precipitation bands by immunoelectrophoretic analysis. Eight distinct antigens have been detected by immunodiffusion but they did not permit to separate the different lots of Sardinella.

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DISCUSSION

W. DE LIGNY: You mentioned, that you did not observe polymorphisms in the transferrins of both species of Sardinella studied.

May I ask you how many individuals of each species you analyzed?

I. C. BARON: I analysed 24 S. eba and 58 S. aurita. Each individual serum has been analyzed by autoradiography. It is not impossible that a rare allele would be found after analyzing 1000 individual sera but for population studies such a rare allele would be not useful.

N. P. WILKINS: I agree with Dr. Baron that hemoglobin is not a good genetic marker for identifying populations of *Sardinella*. Indeed, for most, if not all, members of theorder *Isospondylii* (Salmands, Clupeards, etc.) this is so. But it is a good marker for many members of the order *Anacanthinii* (cod, whiting, etc.).

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