

ELECTROPHORETIC CHARACTERISTICS OF OIL SARDINE (*SARDINELLA LONGICEPS*) AND MACKEREL (*RASTRELLIGER KANAGURTA*) EYE LENS PROTEINS

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Electrophoresis of eye lens proteins of oil sardine and mackerel showed separation of proteins into three and four components, indicating the heterogeneous nature of the population.

INTRODUCTION

The serological and biochemical approach for identifying fish species and populations has been excellently reviewed by Ligny (1969). The search for intra-specific differences by electrophoresis of the eye lens proteins was initiated by Smith (1962 and 1965). The oil sardine and mackerel constitute commercially important fisheries of India. Earlier studies were mainly related to their morphometric and meristic counts (Balakrishnan, 1965; Prabhu and Dhulkhed, 1972). To identify the different groups, if any, preliminary investigations on the electrophoretic characteristics of the eye lens proteins of these fishes were conducted at Mangalore during December, 1973 to February, 1974.

MATERIALS AND METHODS

Eye lens of both the sides of oil

sardine and mackerel (10 nos. each) collected in fresh condition between Malpe in the north and Cannanore in the south, were first removed. The nuclei were then squeezed out, cleared of aqueous humor and dried on a blotting paper. The nuclei were stored in a refrigerator for not more than 48 hours. The two nuclei of each sardine and mackerel were placed separately in test tubes containing 0.5 ml. and 1 ml. of 0.9% sodium chloride respectively and were thoroughly minced by means of a glass rod till the extracts became evenly milky. The extracts were kept in a refrigerator and centrifuged the next day. An application of 3 μ l. of eye lens extract was made on a cellogel strip and the method described earlier for electrophoresis (Dhulkhed and Rao, 1976) was followed. The strips were stained by Amido black and read on the densitometer.

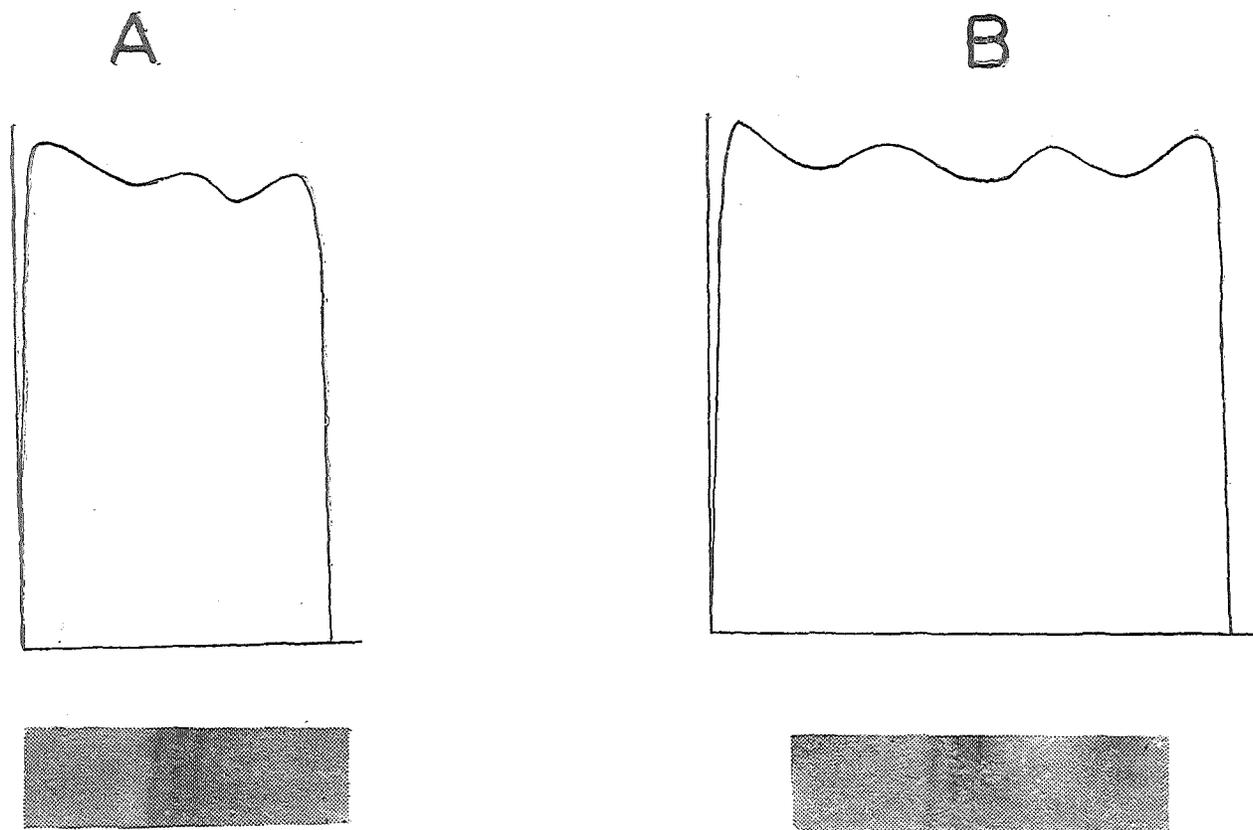


Fig. 1. Graphic representation of the electrophoretic separation of eye lens proteins of oil sardine. A. three components; B. four components.

RESULTS AND DISCUSSION

The electrophoresis indicated separation of soluble eye lens proteins into three or four components in the case of both oil sardine and mackerel. Though the electrophoretograms (Figs. 1-2) of these fishes revealed distinct number of components, it could still be seen that the resolution of the eye lens proteins of oil sardine was more clear than those of mackerel. The pattern of protein concentration curves of the oil sardine and mackerel with three components is almost identical, whereas slight variations were

discernible in the four component group. However, in the case of mackerel, the protein concentration curve was rather diffused.

Although the pattern variations in the components within the species appear to be minor, it could still be inferred that the population of oil sardine and mackerel is heterogeneous. The presence of an extra component among these fishes could reasonably be attributed to genetic differences as observed by Smith (1962) in the case of bluefin tuna and kelp bass.

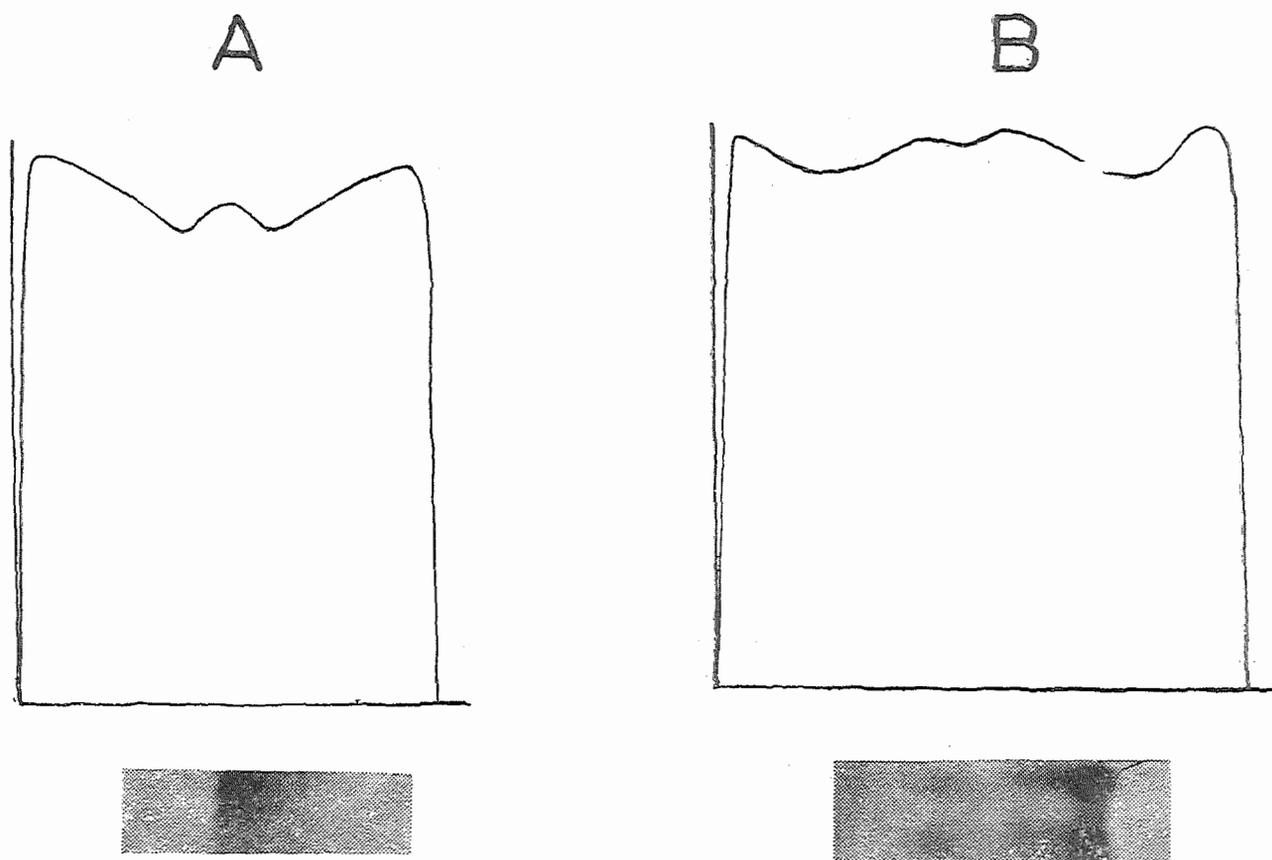


Fig. 2. Graphic representation of the electrophoretic separation of eye lens proteins of mackerel. A. three components; B. four components.

However, it is considered that more detailed investigations of samples covering wider areas would be necessary to establish the intraspecific differences.

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