

## AN ELECTROPHORETIC STUDY OF THE SOLUBLE LENS PROTEINS FROM THE INDIAN MACKEREL, *RASTRELLIGER KANAGURTA* (CUV)

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### ABSTRACT

Soluble eye lens nuclei proteins of the Indian mackerel *Rastrelliger kanagurta* were studied by cellogel electrophoresis, to see whether there are any intra species variations. A distinct pattern characterised by the number of bands, mobility and staining intensity was observed. One fish, having patchy pigmentation externally, however showed variations in the mobility and intensity of the bands.

**Key-words** : Eye lens proteins, electrophoresis, *Rastrelliger kanagurta*.

The Indian mackerel *Rastrelliger kanagurta* (Cuv) is a fish of great commercial importance and of wide geographical distribution in the Indo-Pacific region (Panikkar, 1952). The mackerel fishery along the coasts of the mainland of India is constituted by *R. kanagurta* while in the Andaman Sea *R. brachysoma* is found to occur alongwith *R. kanagurta* (Jones and Silas, 1964).

The mackerel fishery of the west coast, mainly confined to the months of October to February, consists of fish of an intermediate size which are still sexually immature (Chidambaram Krishnamurthy, Venkataraman and Chari, 1952). In the present study they were collected in the months of October, November and December, 1984, from the fish landing centres in Goa. The study was conducted on the electrophoresis of the nuclear eye lens protein to see whether there are any intraspecies variations. Eye lens nuclei of 85 mackerels were screened individually. The methodology was the same as that given earlier (Menezes, 1984).

The eye lens protein pattern (type I) showed 6 bands, of which the 1st, 2nd and 6th were the major protein bands (Fig. 1). This pattern was found to be constant with respect to the number, mobility and intensity of bands in all the fishes studied (Fig. 2), except in one fish which was collected in October from the Panaji fish landing centre (Fig. 3). In this fish, the eye lens protein pattern (type II) also consisted of 6 bands but the mobilities and intensities of the bands were different. The 1st and the 6th band were the major protein bands. In type II, two protein bands were seen (Fig. 3) in place of the 2nd major band of type I (Fig. 1) while the 3rd band of type I was missing in type II. The morphological characters of the fishes of type I were as follows : Total length (TL) 19.6—23.1 cm; Dorsal (D) IX-X, 9-11, 5-6; Anal (A) 10-11.



Fig. 1



Fig. 2

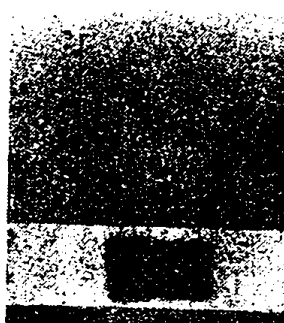


Fig. 3

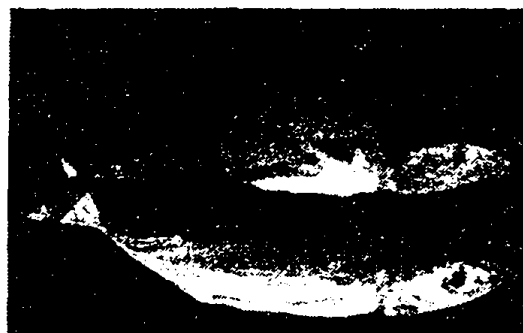


Fig. 4

Figs. 1 & 3. Densitometric tracing of the eye lens protein pattern of *R. kanagurta* (type I & II).

Fig. 2. Electrophoretic patterns of eye lens proteins of *R. kanagurta* (type I).

Fig. 4. *R. kanagurta* type I (a) & type II (b).

4-5; Gill rakers (GR) 35-41 on the lower arm of the first arch. The fin formula of the fish of type II which showed variation in the protein pattern was TL — 21.6 cm: D IX, 11, 5; A 11, 5; GR 39. The only difference seen between this fish and other fishes was in the external pigmentation as seen in Fig. 4. There was a black patchy pigmentation below the origin of the dorsal fin. Also the lower end of the operculum, the lower portion of the pectoral fin and the outer margin of the spinous dorsal fin had a darker colouration. The electrophoretic patterns along with the densitometric tracing showing the intensity of proteins in each band is given in Fig. 1 and Fig. 3. The fractions have been assigned numbers in the order of increasing mobility.

Examination of a small sample of *R. kanagurta* from Madras by Jones and Silas (1964) indicated differences between it and the Andaman specimen of the same species and it was felt that eventual analysis may show that they belong to different populations. Since the available evidence indicates that the variations in the nuclear eye lens proteins have a genetic basis (Eckroat and Wright, 1969; Smith, 1971), it will be interesting, in the light of the present observations, to compare other morphologically similar but geographically isolated species of *R. kanagurta*.

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