EFFECT OF GEL CONCENTRATION ON THE RESOLUTION OF THE MUSCLE MYOGENS OF THE BOMBAY DUCK IN POLYACRYLAMIDE GEL ELECTROPHORESIS.

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ABSTRACT

The effects of different gel concentrations on the resolution of the muscle myogens of the Bombay duck in the polyacrylamide gel electrophoresis are discussed.

The application of the polyacrylamide gel electrophoresis (PAGE) to the separation of proteins are many. In the studies on the biochemical differentiation of the fish species, PAGE is becoming the choice method because extremely small quantities of proteins can be separated in a fast and efficient manner. Moreover, it is possible to adjust the pore size of the gel to suit the separation of the proteins on the basis of their molecular size.

Warrier *et al* (1973) in the polyacrylamide gel electrophoretic separation of the sarcoplasmic protein fractions (SPF) of the Bombay duck, observed that the proteins failed to resolve into distinct bands. The buffer employed was tris-glycine, pH 8.3; gel concentration, 7.0% and field strength, 5 mA|tube for 2 h.

The purpose of this communication is to discuss the system in more detail by studying some variables like buffer system and gel concentration that affect the resolution in the PAGE of the muscle myogens of the Bombay duck, *Harpodon nehereus* (Ham.).

Freshly caught Bombay duck were collected from Sassoon Docks, gutted, cleaned, packed in crushed ice and brought to the laboratory. A piece of dorso lateral muscle was cut, weighed and homogenised with equal volume of distilled water. The homogenate was centrifuged and the clear supernatant was used for electrophoresis.

For the preparation of the gel, the main monomer, Acrylamide was obtained from Lab Chem Industry, Bombay and co-monomer, N N' methylene bis acrylamide from BDH, Poole, England. Monomers were prepared in different

concentrations following the recommendations of Smith (1968). The gel concentration referred to is the final concentration in the monomer-buffer-catalyst mixture and the stock solution were of much higher concentrations.

Electrophoresis was carried out in a discontinous buffer system of tris-HCl|tris-glycine under the field strength of 5 mA|tube. The migration timing was adjusted on the basis of the time taken by the fast migrating anodal fraction to reach a distance of 80 mm in a 100 mm tube.

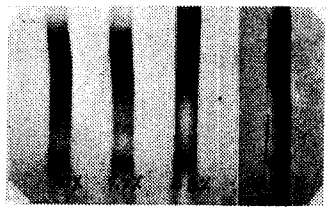

FIG.1. Resolution of the muscle myogens of the Bombay duck in different get strengths.

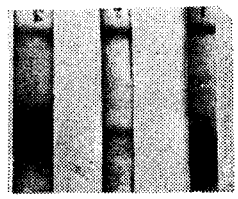

FIG. 2. Resolution of the muscle myogens in 5% get of (1) *Saurida* sp; (2) *Sphyrna* sp and (3) *Chiro-Centrus* sp.

Figure 1 shows the resolution of the muscle myogens in different gel concentrations. In 7.7% gel, one fast migrating anodal fraction and a broad zone at the side of the origin was observed. In 7.0% gel, number in the anodal migrating fractions increased. In 6.3% gel, intensity of the broad zone at the side of the origin was much less and three bands could be counted in that region. The optimum resolution was observed in 5.0% gel where seven bands could be observed.

Separation was faster and the bands were sharper in the discontinous buffer system. It may be of interest to note that resolution of muscle myogens varied in different gel strengths in case of fishes studied in this laboratory. Muscle myogens of the following species showed the maximum resolution in 5.0% gel; *Sphyrna* sp., *Saurida* sp. and *Chirocentrus* sp. (Fig. 2). In higher gel strengths stacking at the origin was observed.

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SMITH, I. (Ed.). 1968. *Chromatographic and electrophoretic techniques, Vol.* 2, *Zone electrophoresis.* William Heinemann Medical Books Ltd., London., 2nd ed.

WARRIER, S.B.K. V. NINJOOR, P. L. SAWANT, AND U. S. KUMTA. 1973. *J. Fd. Technol.*, 8: 283-293.

ON THE OCCURRENCE OF *IXA INERMIS* LEACH IN INDIAN WATERS WITH TAXONOMIC NOTES ON THE SPECIES

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ABSTRACT

The Brachiuran crab, *Ixa inermis* Leach is recorded from the Bay of Bengal, and its male is being reported for the first time from the Indian Waters.

During the study of the trawler catches of Madras (Royapuram centre) two females and one male specimens of a Brachiuran crab, *Ixa inermis* Leach, were obtained. The original description of *Ixa inermis* by Leach (1817) is from a specimen obtained from Malay Archipelago. Suseelan (1971) recorded a single female specimen of this species from the west coast of India. This is the first record of *Ixa inermis* Leach from the Bay of Bengal and the male is recorded for the first time from the Indian Waters. Since *Ixa inermis* is known from only very few specimens Holthuis and Gottlieb (1956) suggested that more material has to be examined to get a clear picture of the species as they felt that the original description of the species by Leach (1817) was inadequate. Hence the specimens collected were examined carefully and described in greater detail here.

ORDER : DECAPODA

SUBORDER : BRACHIURA

Family : Leucosiidae

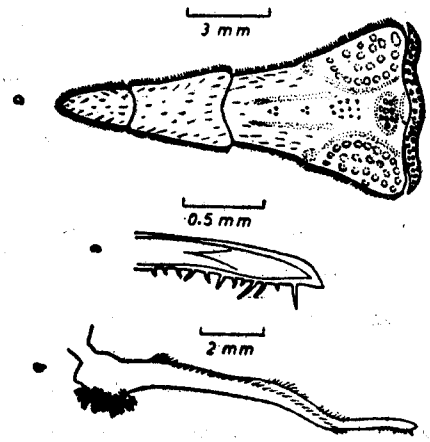
Ixa inermis Leach

Ixa inermis Leach, 1817, p. 26; Holthuis and Gottlieb, 1956, p. 296; Suseelan, 1971, p. 138.

Not *Ixa inermis* Alcock, 1896 and Chopra, 1933.

Material: One male (carapace length: 16 mm, carapace breadth: 51 mm), collected on 5th July, 1972, Off Royapuram, Madras, bottom trawl, 25m depth. Two females (C.L: 17mm and 18.5mm, C.B.: 49mm and 51.5mm) collected on 15th February, 1973 off Madras, bottom trawl, 25m depth.

Description: Body rhomboidal and lateral projections of the carapace cylindrical with a small constriction at base. The lateral projections taper gradually and end in a sharp tubercle. The dorsal surface of the carapace with two broad longitudinal grooves which are bifurcated anteriorly and filled with tomentose pubescence. Edges of the groove rounded and they gradually merge with the dorsal surface of the carapace. Two small submedian granular tubercles on the posterior margin of the carapace. Surface of the carapace covered with numerous smaller granules which are slightly bigger on the lateral projections. Carapace with dark violet granules on the dorsal surface and with cream coloured bigger granules on the ventral surface. The buccal cavern is distinctly quadrangular. Third maxilliped partly below the level of the sharp edges of the buccal cavern, which are longitudinally hollowed along their inner border. The orbits deep, completely covering eyes. Antennules fold obliquely and set in a wide gap at the inner canthus. The chelipeds hardly thicker than the slender legs, less than twice the length of the carapace; the distal half of the hand almost filiform, the fingers almost half the length of the hand. The 3rd and 4th abdominal segments of male (Fig. 1-a) are coalescent and bear smaller granules. The 5th and 6th abdominal segments are smooth, being without tubercles. The first pleopod of male (Fig.1-b, c) has a distinct curve below its distal end as noticed by Holthuis and Gottlieb. This curve is deep in the present specimen.



Distribution: Malay Archipelago, Arabian Sea, Bay of Bengal. The present communication is the first record of the species from the Bay of Bengal.

Remarks: Although the charecteristic features of the present specimens are in agreement with the description given by Holthuis and Gottlieb (1956)

slight variations observed are the following: (1) The submedian granules are not very distinct as given by these authors. Among the three specimens at hand they are illdefined in one and smaller in size in others. (2) The upper surface of the 6th abdominal sagment of the male does not bear any distinct granule. (3) The lateral projections of the carapace of the present specimens have different shapes, one being more cylindrical from the base to tip with an abruptly ending tubercle and the others having gradually tapering to an acuminate tip.

KEY TO THE INDIAN SPECIES OF *IXA*

A Longitudinal grooves on carapace sharply defined and with pubescence. Third maxilliped with a few flattened and scattered tubercles:-

A-1 Grooves with ridges overhanging; carapace without submedian tubercle... *I. cylindrus* (Fabricius)

A-2 Edges of the grooves smooth and rounded; posterior margin of the carapace with two distinct submedian tubercles..... *I. inermis* Leach

B Longitudinal grooves on carapace poorly defined; with no pubescence; third maxilliped with large polygonal tubercles..... *I. edwardsii* Lucas

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ALCOCK, A. 1896. *J. Asiat. Soc. Bengal, vol.* 65 (2): 270-73.

CHOPRA, B. 1933. *Rec. Indian Mus., Vol.* 35: 25-52.

CHOPRA, B. 1933a. *Rec. Indian Mus., Vol.* 35: 77-86.

HOLTHUIS, L. B. AND E. GOTTLIEB. 1956. Two interesting crabs (Crustacea, Decapoda, Brachiura) from Mersiam Bay, S. E. Turkey Vol. 34 (21): 287-99.

LEACH, W. E. 1817 The Zoological Miscellany; being Descriptions of new or interesting Animals, Vol. 3: 1-151

SUSEELAN, C. 1971 *J. mar. biol. Ass. India. Vol.* 13: 137-139.

TIRMIZI, N. M. 1970. *Crustaceana Vol.* 18: 312-14.