SUMMARY

1. For the detailed analytical work different procedures were modified and methods standardised in order to get better results. For optimum resolution of different enzymes standardisation of methods indicated 10% acrylamide concentration giving best resolution for protein extracted from different tissues of the species of prawns under study.

2. The buffers employed for the separation of the enzymes Acid phosphatase, Alkaline phosphatase, Alcohol dehydrogenase, Aldehydeoxidase, Esterase, Alpha glycerophosphate dehydrogenase, Lactate dehydrogenase, Malate dehydrogenase, Malic enzyme, Octanol dehydrogenase, Peroxidase, 6-Phosphogluconate dehydrogenase, 1-Pyrroline dehydrogenase, Tetrazolium oxidase and Sorbitol dehydrogenase were Tris citrate Buffer pH 7; Tris citrate Buffer pH 7, Tris versene Borate Buffer pH 8, Tris glycine Buffer pH 8.3, Histidine pH 7 & Sodium citrate pH 7, Tris versene Borate pH 8, Tris citric acid pH 8.3 and Lithium hydroxide pH 8.26, Tris glycine buffer pH 8.3, Tris maleic acid Edta pH 7.6, Tris Maleic acid Buffer pH 7.6, Histidine pH 7 and Sodium citrate pH 7, Tris versene Borate pH 8, Tris versene Borate pH 8, Tris versene Borate pH 8 and Tris glycine Buffer pH 8.3 respectively.

3. The electrophoretic patterns of 15 different enzymes and their loci tested in different tissues, namely eye, hepatopancreas and muscle of two species of prawns P. indicus and P. stylifera has been studied for the first time.

4. Muscle myogen pattern of closely allied species of prawns were anlysed to find out the interspecies genetic variation. Species of genus Metapenaeus, namely M. kutchenensis, M. affinis, M. monoceros and M. brevicornis collected from Bombay waters showed characteristic bands of 7, 12, 9 & 9 respectively. Similarly species of genus Parapenaeopsis such as P. sculptilis P. stylifera and P. hardwickii from Bombay had 9, 8 & 10 bands respectively.

5. Very closely allied species like Penaeus penicillatus and P. merguiensis as well as P. japonicus, P. latisulcatus and P. canaliculatus. were further subjected to ultra scanning and photography of the gels which showed distinct band nature useful for identifying the species.

6. The present ontogenetic observation in P. indicus shows that each larval stage of a species can be clearly identified on the basis of species-specific number of enzymatic protein bands. In cases where same number of bands exist in different stages the characteristic pattern of the bands would be useful in differentiating these stages.

7. Electrophoretic investigations of different isozymes in Penaeus indicus and Parapenaeopsis stylifera have enabled to detect seven polymorphic loci in P. indicus and six in P. stylifera, out of 23 and 22 loci analysed in the respective species.

8. The lack of goodness of fit as per Hardy-Weinberg equilibrium, in the distribution of different phenotypes in all the population of P. indicus and P. stylifera tested from samples from different places may be due to deficiency of heterozygotes and excess of homozygotes.

9. Genetic identity and genetic distance estimates following the analysis of Nei as well as Roger suggests that the population samples from four locations in the case of Penaeus indicus and the population samples from two location in the case of Parapenaeopsis stylifera are genetically similar.

10. There is little evidence to show that the prawns P. indicus and P. stylifera are subdivided into two or more genetic stocks. For management purpose all the population of these two species of prawns sampled from different locations, namely P. indicus from Cochin, Tuticorin, Madras and Waltair and P. stylifera from Cochin and Bombay appear to belong to a single unit biochemically.

11. The observation of apparent polymorphism in the enzyme octanol dehydrogenase alone in the Waltair samples of P. indicus would suggest the probable existence of an isolated population of the species there.

12. In P. stylifera out of the various enzymes analysed acid phosphatase alone showed some difference in the phenotypic distribution and allele frequency between Cochin and Bombay samples.

13. Statistical analysis of certain selected morphometric characters of sample specimen collected from Cochin and Tuticorin in the case of P. indicus and Cochin and Bombay in the case of P. stylifera exhibited very little significant variation, in confirmity with the biochemical results.

14. Thus, as far as P. stylifera is concerned the populations at both Cochin and Bombay appear to be the same both biochemically and morphologically. Similar is the case with P. indicus of Cochin and Tuticorin. However, in the case of P. indicus some significant variation has been noticed in certain morphological features between Madras-Cochin and Madras - Tuticorin specimens, probably brought about by the differential growth due to different environmental features in relation to geographical situation.