

Genetic diversity of Indian white shrimp *Fenneropenaeus indicus* in the seas around Indian ocean based on mitochondrial COI sequence analysis

Sajeela K A, Gopalakrishnan A, Basheer V S, Bineesh K K, Akhilesh K V, Raj Kumar, Anup Mandal and Jena J K

Central Marine Fisheries Research Institute, India

Indian white shrimp, *Fenneropenaeus indicus* is an important crustacean species in the commercial fish landings of southwest and southeast coasts of India and highly preferred for the rice-fish culture practice in Kerala. With high market values and abundance, it has been one of the most important commercial shrimp species for marine fisheries and aquaculture industries along the coasts of Africa (Mozambique, Tanzania, Kenya), Sri Lanka, Red Sea and Persian Gulf. *F. indicus* caught from southeast coast popularly known as "Tuticorin White" is larger in size and fetches a higher price in countries like Japan and China. Similarly, the Red Sea strain of *F. indicus* has been reported to be a strong osmoregulator (withstanding salinity up to 58ppt and water temperature 34.5°C) and an ideal candidate for commercial aquaculture operations under severe salinity and temperature conditions.

In the present study, we assessed the DNA sequence variation at the mitochondrial Cytochrome Oxidase I gene of *F. indicus* distributed in the seas around Indian

Ocean in order to investigate its genetic structure and dispersal patterns. Six populations from wide different geographical locations [Jiddah (Red sea); Abu Dhabi(Persian Gulf); Veraval, Mangalore, Kochi(Arabia Sea); Tuticorin(Gulf of Mannar) and Port Blair(Andaman Sea) were collected (five samples each) and analysed based on a 650 base pair fragment of mitochondrial COI. The occurrence of strong genetic subdivisions among the samples, Clade1-Red Sea, Persian Gulf and Gujarat(Northern Arabian Sea); Clade 2- Mangalore, Kochi(Southern Arabian Sea) and Tuticorin(Gulf of Mannar); Clade 3- Port Blair(Andaman Sea) detected by the fixed haplotype differences, analysis of molecular variance(AMOVA) and significant F_{ST} values indicated that stocks of *F. Indicus* in Indian Ocean are genetically distinct. The findings of the present study have important implication in management of natural populations of *F. Indicus*, domestication and selective breeding of the species in the region.