Study the Mitochondrial COI Gene Sequence Variation of Two Isolated Populations of *Cephalopholis sonnerati* (Valenciennes, 1828) in East and West Coasts of Sri Lanka

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Cephalopholis sonnerati (Thambuwa) remained as one of the main reef fish species in the marine fishery sector in Sri Lanka. The major problem associated with the fish species is the huge population reduction in last few years due to the overexploitation. At present, this species has been protected under the fisheries law and this decision has been taken as a precautionary conservation and management measure. It is essential to conduct fish stock studies to assessment of sustainable fishing levels based on stocks. *C. sonnerati* in East and West coast may be from two different fish stocks due to the limited breeding between the populations. Due to the restriction of gene flow between two isolated populations, nucleotide level variation would provide a basic idea about population and stock structure. The study was conducted with the aim of identification of genetic variation at the mitochondrial *cytochrome oxidase* subunit I (COI) gene in two isolated populations. Fish samples were collected from east coast (Ampara and Batticaloa) and west coast (Chilaw). DNA was extracted by using CTAB method. PCR reaction was performed by using primers designed by COI gene sequences. PCR amplified products were sequenced and sequences were analyzed using BLASTn at NCBI and were aligned by using BioEdit and ClustalW sequence alignment tools. Even though the COI region is highly conserved region, single nucleotide polymorphism (SNP) was identified at 336th position (T/C) in both west and east coast *C. sonnerati* samples. To confirm the SNP in COI region more samples need to be used in the future studies. Due to the conserved nature of COI region very low nucleotide level difference was observed and all individuals shared similar sequences pattern. It can be confirmed that the two populations may still from the same stock. To confirm that it can be used microsatellite markers along with SNPs in future. This study provides a basic for future genetic stock studies.

Keywords: *Cephalopholis sonnerati*, Mitochondrial COI region, Single nucleotide polymorphism, Reef fish