

**DETERMINATION OF MORPHOLOGICAL AND
GENETIC DIVERSITY OF WILD GUPPY (*Poecilia
reticulata*) IN SRI LANKA ACROSS THE MAJOR
HISTOCOMPATIBILITY COMPLEX WITH SPECIAL
REFERENCE TO CLASS IIB REGION**

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ABSTRACT

Wild guppies have potential in developed various strains with attractive colour patterns, tail type and tolerated in a wide range of environment conditions, resistance to disease conditions due to high immunity. Application of molecular genetic markers, are important to conservation of genetic resources and finding morphological diversity of wild guppies economically beneficial to ornamental industry. Major histocompatibility complex (MHC) genes are highly polymorphic gene family and exon 2 gene is functionally important in immune and disease resistance. Conservation by incorporating immune genes is important to understand wild life immune genetic. Wild guppies were collected from 10 regions according to Agro climatological regions, 238 fishes were collected as total sample of the study and stranded length in between 13-24mm were selected (179 fishes) to gathered of morphological information, Genomic DNA was extracted from muscle tissue using Chelex 100 DNA extraction kit, targeted region was amplified using forward (5'GTG GAT TTC AGA GAA TAT GCA 3') and reverse (5' TGA TTT ATC CAG AGC GGT TTG 3'). Touch down PCR was followed to amplification in the temperature ranging 45°C to 47°C. Selected fish sample was consisted 43.6% of male fishes and 56.4% female fishes. Significant association was exists tail type and colour pattern versus region. Highest variation of tail pattern types was recorded from Buttala region and from whole sample of guppies 40.8% were consisted round tail type. Badulla region fishes were consisted high variation of colour patterns. 58.7% fishes had brownish gray colour pattern. 43% golden upper body colour pattern type fish was consisted from whole sample, variation of upper body colour in all regions were similar. PCR protocol was optimized. There was a morphological diversity between wild guppy fishes in different regions of Sri Lanka. Exon II in MHC class IIB region was amplified and optimized PCR protocol for further studies. Preliminary and sequence variation based on Single Nucleotide Polymorphism (SNPs) of wild guppy population is yet to be done by Single Stranded Conformation Polymorphism.

Key words: Major Histocompatibility complex, Wild guppy, Morphological diversity, Gentic diversity, Immunity