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Cytogenetic Study of Long Snout Bullhead *Leiocassis dumerili* Gnther(Teleostomi: Siluriformes)

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Introduction

Karyotype analysis has been used for genetic improvement in fish culture and is necessary to delineate both normal and pathologic molecular physiology of a given species. Chromosomes of Korean catfish species have been studied by many authors. However, due to the scarcity of specimens, no chromosomal study has been carried out on long snout bullhead *Leiocassis dumerili*, a native fish species that used to distribute in main rivers in Korea. Recently, for stock recruitment and aquaculture development, long snout bullheads are imported from China. So, cytogenetic analysis of this species to provide basic information for breeding and stock management becomes a necessity.

The aim of present study is to provide basic information on the karyotype of the long snout bullhead, *Leiocassis dumerili*. Moreover, the number and localization of Ag-NORs, DNA content, and characterization of satellite DNA were studied. The results of present study were compared with published cytogenetic data of related species.

Matrials and methods

Chromosome slides were prepared by the standard kidney procedure with some variant (Kim et al., 1995). Well spread metaphases were selected and photographed and the chromosomes were classified following Levan's nomenclature. The identification of the nucleolar organizer regions (NORs) was carried out with the one-step silver nitrate method. Flow cytometry was performed to measure the DNA content. Genomic DNA from specimens of both sexes was extracted from whole body blood using conventional SDS/proteinase K method as described by Nam et al. (1998). The extracted DNA was digested with ten restriction endonucleases and then run onto 1.4% agarose gel in 1 TBE, stained with propidium-iodide and photographed.

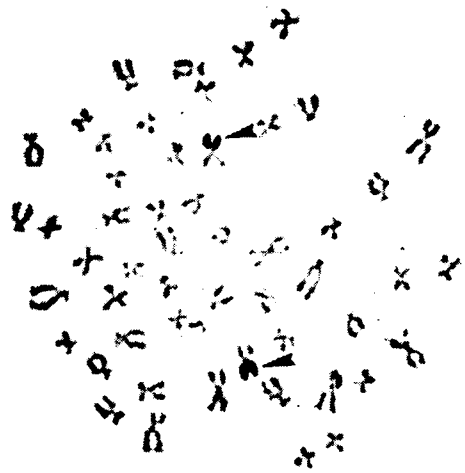

Fig. Metaphase spreads of *Leiocassis dumerili* after Ag-staining. Arrows indicate NOR regions.

Results and summary

Totally 219 metaphase plates were observed and the results revealed that the modal chromosome number is 52 with 9 metacentric pairs, 8 submentacentric pairs and 9 acrocentric pairs. No herteromorphic sex chromosomes or microchromosomes were found and Ag-stained nucleolar organizer regions (Ag-NORs) were found to be localized on one pair of acrocentrics. DNA content per cell was 1.6 pg. Digestion of the genomic DNA with ten restriction endonucleases revealed at least four satellite DNA families with monomers of about 320 bp, 280 bp, 400 bp and 800 bp, respectively, and this suggested the existence of different classes of repetitive DNAs in the genome of the species.

References

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