

Chromosome preparation in fish: effects of fish species and larval age

ABSTRACT

To date, several protocols have been developed to achieve clear and identifiable metaphase chromosome spreads from larvae of a single fish species. However, the efficiency of these protocols in more than one fish species has barely been compared within a single study. This work investigated the dependency of chromosome preparation parameters including colchicine concentration (0.01, 0.025, 0.05 %) and exposure duration (3, 5 h), hypotonic solution (distilled water, 0.075 M KCl solution), and Giemsa stain solution concentration (6, 8, 10, 11, 12, and 14 %) and incubation period (15, 30, 45, and 60 min) to two species of fish, the African catfish (*Clarias gariepinus*) and the zebrafish (*Danio rerio*) at different larval ages (0, 2, and 4 days post-hatch, dph). Results indicated that larval age, colchicine concentration and/or incubation time, and/or the type of hypotonic solution varied with fish species while staining the chromosomes with 11 % Giemsa solution for 45 min can be maintained regardless of the species or larval age. Interestingly, employing the selected values from diploid *C. gariepinus* experiment to prepare metaphase chromosomes from larvae of their triploid siblings proved to be efficient.

Keyword: Metaphase chromosome spread; Colchicine; Hypotonic solution; Giemsa stain; Zebrafish; African catfish