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SHORT COMMUNICATION

First description of microchromosome in the Anostomidae fish *Schizodon nasutus* from Argentina

M.C. Pastori, A.S. Fenocchio and P.A. López

ABSTRACT

Thirty-six specimens of *Schizodon nasutus* (Anostomidae-Characiformes) from the middle Paraná River (Posadas, Argentina) were analyzed cytogenetically. The karyotype of this species was similar to those described for this species in the literature. C-banding technique showed a rich heterochromatic pattern relative to other Anostomidae species. The NORs were located on one chromosome pair in terminal position and showed a very marked size heteromorphism. A microchromosome was observed with a frequency of about 20% in the sample studied. This additional element was punctiform, negative C-band, and constant in all metaphase plates of the seven carriers. The present study is the first karyotypic approach to *Schizodon nasutus* from Argentina and the first description of microchromosome in Anostomidae.

INTRODUCTION

The Anostomidae belong to a major group of Neotropical Characiforms that include several families. Anostomids form a single phylogenetic group with Prochilodontidae, Curimatidae and Chilodontidae (Vari, 1983). These families share similar ethological and karyotypic characteristics (i.e., migratory habits, diploid number, fundamental number, chromosome types, predominance of single NORs) (Bertollo *et al.*, 1986; Oliveira *et al.*, 1988; Oliveira and Foresti, 1993).

The Anostomidae include several genera (*Leporinus, Leporellus, Schizodon, Abramites and Anostomus*). The same chromosome number (2n = 54) and general karyotypic structure was determined for all of them. Till now there are no descriptions of supernumerary chromosomes in this family (for a review see Salvador and Moreira Filho, 1992). The genus *Schizodon* has been studied cytogenetically by several authors in Brazil (Galetti Jr. *et al.*, 1981, 1984, 1991; Venere and Galetti Jr., 1989). In Argentine rivers only four species *S. vitattus, S. platae, S. fasciatus* and *S. nasutus* of this genus have been found (Ringuelet *et al.*, 1967).

MATERIAL AND METHODS

Thirty-six specimens of *Schizodon nasutus* (18 males, 12 females and six individuals of undetermined sex) from the middle Paraná River (Posadas, Misiones, Argentina) were analyzed cytogenetically.

Mitotic chromosome preparations were obtained from kidney cells using air drying techniques (Bertollo *et al.*, 1978; Foresti *et al.*, 1993). C-banding was performed by the method of Sumner (1972) and NORs were obtained by the technique of Howell and Black (1980). The chromosomes were classified according to Guerra (1986).

RESULTS AND DISCUSSION

The modal diploid number observed in *S. nasutus* from the Paraná River (Posadas, Argentina) is

Laboratorio de Citogenética General, Departamento de Genética, Facultad de Ciencias Exactas Químicas y Naturales. U.Na.M. Félix de Azara 1552. 3300 Posadas, Misiones, Argentina. Send correspondence to M.C.P.

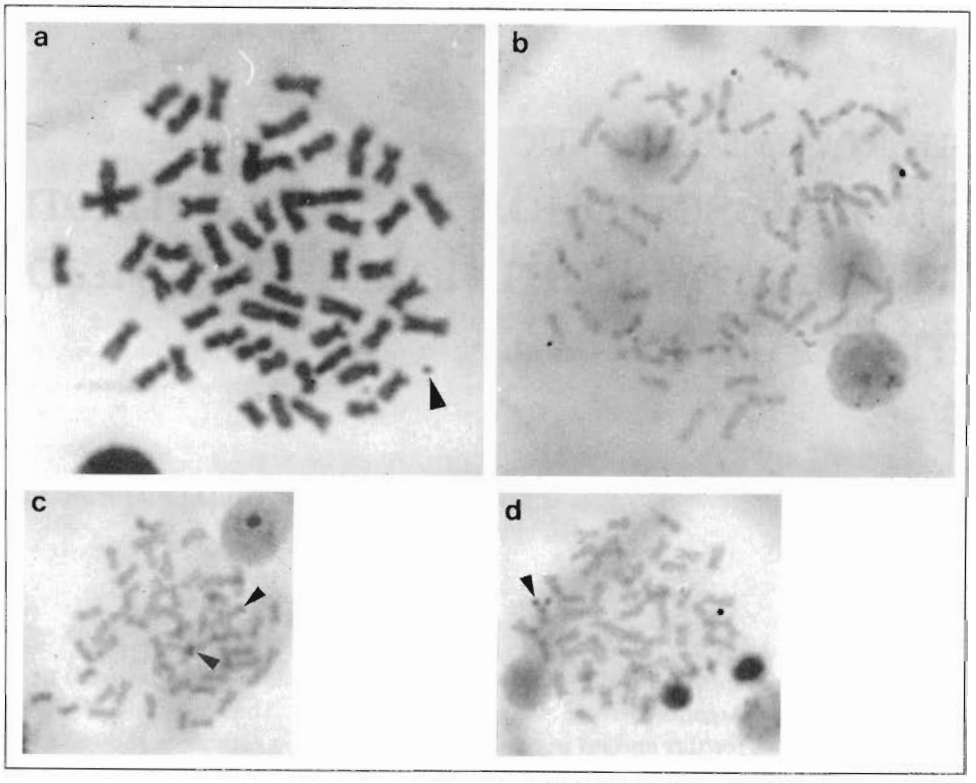

Figure 1 - *Schizodon nasutus* a, Metaphase plate. The arrowhead shows the microchromosome. b, C-banding. c and d, NOR banding. The arrowheads indicate the NOR's location.

54 chromosomes, with FN = 108, 16 pairs of metacentric and 11 pairs of submetacentric chromosomes. (Figure 1a).

The C-banding technique showed a somewhat rich heterochromatic pattern, with clear blocks in centromeric, pericentromeric and terminal regions of several chromosome pairs (Figure 1b). A similar situation was observed by Galetti Jr. *et al.* (1991) and Mestriner (1993) in other Anostomidae species, especially in Brazilian populations of *S. nasutus* (Galetti Jr. *et al.*, 1981). NORs in this family could be used as a taxonomic character (Galetti Jr. *et al.*, 1984). In *S. nasutus* they were located in a terminal position, in one chromosome pair. These regions showed a very marked size heteromorphism and in some cases only one chromosome was stained by the silver salts (Figure 1c-d). The present results evidence the karyotypic homogeneity within Anostomidae, showing that *S. nasutus* from Brazil and Argentina share practically the same chromosome characteristics.

Meanwhile, a microchromosome was found in seven of the 36 specimens (Figure 1a), so representing a non-accidental occurrence in the population studied. This additional element appears as negative in C-banding, punctiform and constant in all metaphase plates of the carriers, representing the first description of such chromosome in Anostomidae (for review see Salvador and Moreira Filho, 1992). Accessory microchromosomes have been found in species of Prochilodontidae (Pauls and Bertollo, 1983, 1990) and Curimatidae (Venere, 1991; Oliveira and Foresti, 1993) families that are included in the same phylogenetic group.

Oliveira and Foresti (1993) have advanced at least two hypothesis about the origin of B chromosomes detected by them in Curimatidae and by Pauls and Bertollo (1983, 1990) in Prochilodontidae. The first hypothesis is that the Bs were present in the ancestral lineage which originated the Curimatidae. On the other hand, these chromosomes could also be present in the original lineage from which the Prochilodontidae and the Curimatidae arose. So, the Bs were probably lost in most Curimatidae and conserved in some species of Prochilodontidae (Pauls and Bertollo, 1990). By that time, it is difficult to suggest a hypothesis about the accessory element in *S. nasutus*, as this is the first case observed for the Anostomidae. It might be of recent origin, arising independently in the population studied here.

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RESUMO

Trinta e seis espécimens de *Schizodon nasutus* (Anostomidae-Characiformes) do médio Paraná (Posadas,

Argentina) foram analisados citogeneticamente. O cariótipo encontrado foi semelhante aos descritos para esta espécie na literatura. A técnica de bandamento C mostrou um rico padrão heterocromático em relação a outras espécies de Anostomidae. As NORs localizaram-se em um par cromossômico em posição terminal e mostraram um acentuado heteromorfismo de tamanho. Um microcromossomo foi observado com freqüência de cerca de 20% na amostra estudada. Este elemento adicional era puntiforme, bandamento C negativo e constante em todas as placas metafásicas dos sete portadores. O presente estudo é o primeiro com abordagem cariotípica em *Schizodon nasutus* da Argentina e a primeira descrição de microcromossomo em Anostomidae.

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