Gayana 72(2): 268-270, 2008 Comunicación breve ISSN 0717-652X

CHROMOSOMES OF THE LIMPET *FISSURELLA LIMBATA* (SOWERBY, 1835) FROM NORTHERN CHILE (ARCHAEOGASTROPODA: FISSURELLIDAE)

CROMOSOMAS DE LA LAPA FISSURELLA LIMBATA *(SOWERBY, 1835) DEL NORTE DE CHILE (ARCHAEOGASTROPODA: FISSURELLIDAE)*

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RESUMEN

Fissurella limbata (Sowerby, 1835), presenta un número cromosómico diploide 2n = 32 similar al descrito previamente para otras especies del género *Fissurella* Reeve 1849. El juego cromosómico haploide de *F. limbata* tiene siete cromosomas metacéntricos, seis submetacéntricos y tres subtelocéntricos. Los cromosomas son pequeños y no exceden de 4,0 µm en longitud.

Fissurella Reeve 1849 is a polytypic genus represented in Chile by 13 limpet species that inhabit in the sea coast from 18º to 56ºS. Within the wide distribution range of the genus, nine species inhabit along the coastal area from Perú to Chile (Peruvian Province), whereas four species are localized in the coast of the southern region of Chile and Argentina (Magellanic Province) (Mclean 1984).

The identification of the species belonging to *Fissurella* has been classically based in morphological characters such as body-size, shell porous, epipodial tentacles, and pigmentation patterns of the shell, foot, mantle and head. Thus, various catalogue and guides for species identification have been documented for Chilean taxa of the genus (Oliva & Castilla 1992, Sasaki 1998, Osorio 2002). In contrast, genome studies in the genus *Fisurrella* are scarce. Recently, Olivares-Paz *et al*. (2006) have documented a first molecular study that included PCR-RFLP analysis of the mitochondrial cytochrome-b gene for authentication of 12 Chilean species of commercial importance. Additionally, Amar *et al*. (2003) have described preliminary chromosome characters for three *Fissurella* species, and Jara-Seguel (2007) has compiled chromosome numbers for five species all with a diploid number 2n = 32.

F. limbata (Sowerby 1835) is a species belonging to the Peruvian Province (Guzmán *et al*. 1998), and inhabits in the coastal area of Antofagasta in northern Chile. In this work, the somatic chromosome complement of *F. limbata* is shown for the first time.

To carry out the chromosome study, specimens of *F. limbata* were collected in the Constitución Beach, Mejillones Province (23º26´S; 70º35´W), northern Chile. The species was identified according to Oliva & Castilla (1992). In the laboratory, the specimens were submerged in colchicine 0.02% diluted in sea water (w/v) for 4 hours at room temperature and constant aeration.

Later, the gills were excised for dissection, hypotonised in 70% sea water solution (70% sea water and 30% distilled water) for 50 min and fixed in ethanol-glacial acetic acid (3:1 v/v) at 4ºC until required. The metaphases were obtained by squashing of gill-cells using a phase contrast microscope OLYMPUS CH30. The chromosomes were stained using 4% Giemsa in phosphate buffer at pH 6.8. The metaphases were photographed with a video camera SONNY CCD-IRIS connected to the microscope. Chromosomes were measured in photographic enlargements and standarized as a percentage of the total haploid set length. Chromosome shape was classified according Levan *et al*. (1964). The karyogram was constructed with chromosomes organized on the basis of shape and size-decreasing order.

F. limbata has a diploid chromosome number 2n = 32 (Fig. 1). The formula for the haploid chromosome set of *F. limbata* was 7m + 6sm + 3st. Secondary constrictions and satellites were not observed on the chromosomes. The complement was moderately symmetric with most of 80% of the chromosomes within the metacentric and/or submetacentric categories, tendency previously described in almost 14 species of Archaeogastropoda included within the families *Haliotidae*, *Trochidae* and *Phasianellidae* (Thiriot-Quiévreux 2003). The chromosomes of *F. limbata* are small and the pair 1 do not exceed 4.0 µm in length.

At present, species relationships using cytogenetic data are scarce for *Fissurella*, and only morphological and molecular characters have been used to its biosystematics study (McLean 1984, Oliva & Castilla 1992, Sasaki 1998, Olivares-Paz *et al*. 2006). In this work, *F. limbata* showed similitude in chromosome number respect to *F. cumingi* (Reeve 1849), *F. maxima* (Sowerby 1835) and *F. latimarginata* (Sowerby 1835) (Amar *et al*. 2003), being the haploid number n = 16 a conservative genome character among the species so far examined within the genus. In the future, additional chromosome studies in Chilean *Fissurella* species are necessary to be done, which may complement the zoogeographical, morphological and molecular antecedents so far documented for the genus (McLean 1984, Oliva & Castilla 1992, Guzmán *et al*. 1998, Sasaki 1998, Olivares-Paz *et al*. 2006).

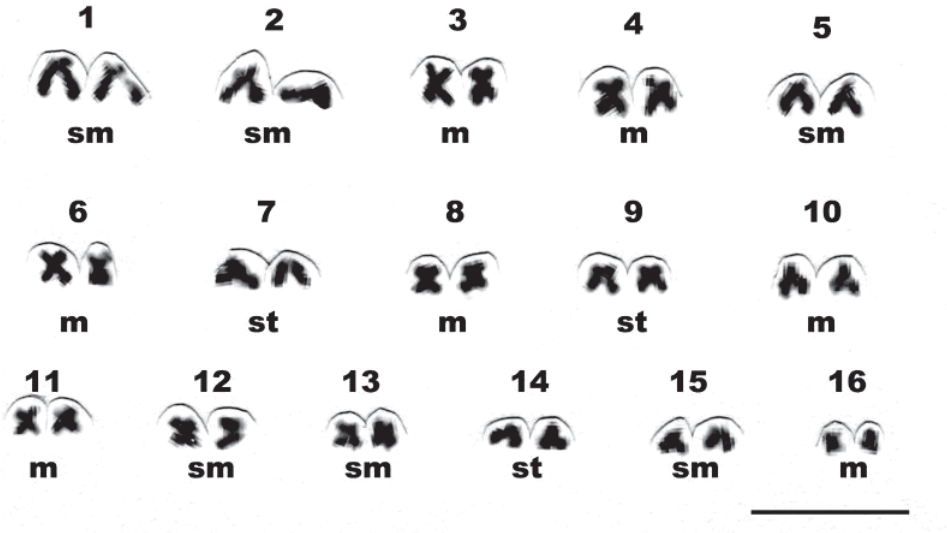

FIGURE 1. Karyogram of *F. limbata* 2n = 32. Bar = 10 µm

FIGURA 1. Cariograma de *F. limbata* 2n = 32. Barra = 10 µm

ACKNOWLEDGEMENTS

We are grateful to Unidad de Genética, Departamento Biomédico and Instituto de Investigaciones Oceanológicas, Facultad de Recursos del Mar, Universidad de Antofagasta, Chile. Thanks are due to Santiago Peredo for reading the English version of the manuscript.

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Recibido: 13.08.08
Aceptado:08.10.08