The G-Banded Karyotype of the Tapeti Rabbit*(Sylvilagus brasiliensis)* from Chiapas , Mexico

El cariotipo con bandas G del conejo Sylvilagus brasiliensis de Chiapas, México

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ABSTRACT

Sylvilagus brasiliensis truei has a 2n of 40, FN of 76, 4 pairs of metacentric chromosomes, 6 pairs of submetacentrics, and 9 pairs of subtelocentrics. A pair of subtelocentric chromosomes bears satellites. The X chromosome is metacentric and the Y chromosome is telocentric. All chromosomes showed distinctive G-bands. The 2*n*, FN, and chromosome morphology of this rabbit from Chiapas, México, are distinctive although share some features with other *Sylvilagus* karyotypes.

Key Words: Karyotype, *Silvilagus,* Chiapas, México

RESUMEN

Sylvilagus brasiliensis truei tiene un 2*n* de 40, un FN de 76, 4 pares de cromosomas metacéntricos, 6 pares de submetacéntricos y 9 pares de subtelocéntricos. Un par de subtelocéntricos tiene satélites. El cromosoma sexual X es metacéntrico, mientras que el cromosoma sexual Y es telocéntrico. Cada par cromosómico tiene bandas G características. El 2*n*, FN y la morfología cromosómica de este mamífero de Chiapas, México, son distintivos pero comparte características con otros cariotipos de especies de *Sylvilagus.*

Palabras Clave: Cariotipo, *Silvilagus,* Chiapas, México

Introduction

The Tapeti rabbit *(Sylvilagus brasiliensis)* is a small rabbit, weighs less than 1,000 g, and has a small and ventrally dark tail, short hind feet and short ears (Álvarez del Toro, 1977; Chapman and Ceballos, 1990). In México, the color of these rabbits is dark brown with lighter flanks and whitish underparts. The Tapeti rabbit occurs from the tropical east and southeast México in North America through Central America to Sonth America, except at high altitudes and in the Patagonian region south of the Argentinian Chaco (Chapman and Ceballos, 1990)

In México and Central America this species is mainly found in tropical forests (Chapman and Ceballos, 1990). The abundance of the Tapeti rabbit in the Mexican tropics apparently decreases whan extensive areas are deforested. However, it survives well in second growth forests and pastures (Álvarez del Toro,]977; Chapman and Ceballos, 1990). An action plan and review of the status of the world's lagomorphs determined that surveys are required to understand better the status of this rabbit (Chapman and Ceballos, 1990).

In spite of its wide geographical distribution in the Neotropics the biology of the Tapeti rabbit is poorly known (Eisenberg, 1989). Moreover, most of the contributed information deals with its taxonomy and natural history (e.g., Chapman and Willner-Chapman, 1982; Diersing, 1981*;* Durant, 1983). However, no genetic data are available for this rabbit.

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Since we were interested in the karyotype attributes of the Mexican lagomorphs, we decided to study its diploid chromosome number (2*n*), fundamental number (FN), and chromosome morphology. The aim of this paper is, therefore, to report on the G-banded karyotype of *Sylvilagus brasiliensis* from Chiapas, México.

Materials and Methods

Sylvilagus brasiliensis truei was collected in the summer of 1992 with a National live trap on the ground of a tropical rain forest in Chajul, Chiapas, México (16° 06' north latitude and 90° 57' west longitude). Blood samples were collected by cardiac puncture. Months later the specimen died and was conventionally prepared as museum specimen (skin and skeleton), and deposited in the mammalian collection (37383-IBUNAM) of Instituto de Biología, Universidad Nacional Autónoma de México.

Metaphase spreads were obtained from leukocyte cell cultures (Arakaki and Sparkes, 1963*)* followed by the colchicine and 0.075 M KCl hypotonic method (Baker and Qumsiyeh, 1988*).* A total of 42 mitotic fields from 14 chromosome slides were used to count the chromosomes and determine the 2*n*. In addition, nine high quality metaphase spreads were chosen to take photographs, cut the chromosomes and describe the conventional karyotype. The chromosomes were classified on the basis of centromere position (Naranjo *et al.,* 1983) based on the data established by Levan *et al.* (1964). From an additional set of 15 chromosome slides, only ten high quality mitotic fields out of 45 found were chosen for G-banding analysis. G banded chromosomes were produced following the trypsin method reported by DeGrouchy and Turleau (1977).

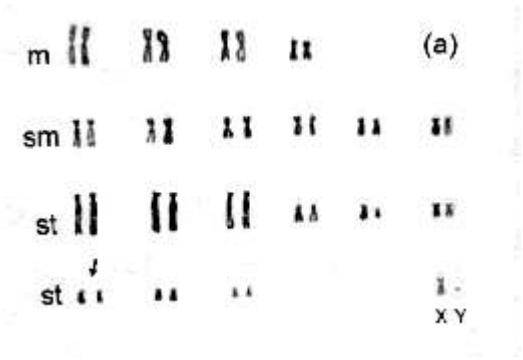

Figure 1a. Conventional karyotype of the Tapeti rabbit *(Sylvilagus brasiliensis truei;* male 37383 Instituto de Biología. Universidad Nacional Autónoma de México, from El Chajul. Chiapas, México. m= metacentric chromosome, sm= submetacentric chromosome. st= subtelocentric chromosome. X and Y= sex chromosomes. The arrow points to the chromosome pair bearing satellites.

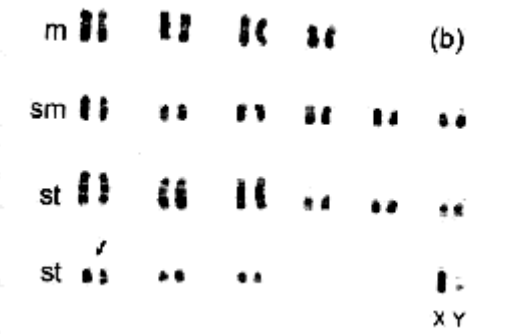

Figure 1b. Chromosome G;-bands of the Tapeti rabbit *(Sylvilagus brasiliensi truei.* male 37383 Instituto de Biología, Universidad Naciónal Autónoma de México) from El Chajul, Chiapas, México. m= metacentric chromosome, sm= submetacentric chromosome, st= subtelocentric chromosome, X and Y= sex chromosomes. The arrow points to the chromosome pair bearing satellites.

Results

This karyotypical analysis consistently produced the same results. The Tapeti rabbit showed a 2*n* of 40, a FN of

76, 4 pairs of large to medium metacentric chromosomes, 6 pairs of medium to small submetacentrics, and 9 pairs of large to small subtelocentrics (Fig. 1a). One pair of the small subtelocentric pairs showed satellites. The X chromosome is a medium metacentric while the Y chromosome is a very small telocentric, although figure 1a, shows a micro Y sex chromosome.

Every chromosome pairs showed distinctive G-bands along the length of each chromome (Fig. 1b). The Y sex chromosome displayed a very small amount of euchromatin. The chromosome G-bands allowed positive identification of each pair of homologous chromosomes.

Discussion

Sylvilagus brasiliensis truei turns out to be the rabbit with the lowest 2*n* of the leporids occurring in México. The desert cottontail (S. *audubonii),* the eastern cottontail *(S.floridanus),* the Mexican cottontail (S. *cunicularius),* and the Tres Marías Islands cottontail (S. *graysoni),* all share a 2*n* of 42 (Lorenzo *et al*., 1993). However, the swamp rabbit (S. *aquaticus)* and the marsh rabbit (S. *palustris)* are still the leporids with the lowest 2*n* (38) of the family (Chapman and Ceballos, 1990*).*

Interestingly, the chromosome morphology of the autosomes of the Tapeti rabbit revealed the presence of solely bi-armed chromosomes. This condition fits the pattern found in Leporidae where low 2*n* numbers are correlated with the presence of mostly bi-armed chromosomes (Robinson et al., 1984). On the other hand, the FN of *Sylvilagus brasiliensis truei* was higher in comparison with those (70-74) of other Mexican rabbits (Lorenzo et al., 1993).

The presence of satellites is common among the Mexican leporids (Lorenzo *et al*., 1993). The subtelocentric pair beanag satellites of the Tapeti rabbit always displayed this condition in the slides examined. The morphology of the sex chromosomes is just like that reported for *S. audubonii* (Robinson *et al*., 1984).

In summary, the diploid chromosome number, fundamental number, and chromosome morphology of the Tapeti rabbit from Chiapas, México, are distinctive. However, its karyotype shares some features with that of other members of the genus *Sylvilagus.*

Dedication

We dedicate this manuscript to the memory of Dra. Leonila Vázquez García, dear instructor, friend and colleague.

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