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Thesis Abstract

Classical and molecular cytogenetic analysis in *Chelonoidis carbonaria* and *Phrynops geoffroanus* (Testudines)

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The number of species of reptiles has decreased since the time that they ruled the Earth until the present days. Turtles have been little studied, particularly regarding their cytogenetics. The present study investigated, using classical and molecular cytogenetic techniques, the chromosomes of *Chelonoidis carbonaria*, a terrestrial species, and *Phrynops geoffroanus*, an endangered species that lives along the rivers, both in South America. Blood samples were collected from animals at the breeding farm Reginaldo Uvo Leone in Tabapuã, SP. All procedures were approved by the Animal Ethics Committee (No. 50/07-CEEA, Botucatu, SP) and IBAMA/RAN (No. 14729-1). The metaphases were prepared from blood incubated in culture medium for lymphocytes, which were stimulated to divide by the addition of phytohemagglutinin. After this procedure, colchicine was added to inhibit the formation of spindle fibers, maintaining the cells in metaphase. We assessed male and female *C. carbonaria*, which had the same number of chromosomes, 2n = 52, and specimens of *P. geoffroanus*, which were described for the first time and showed females with 2n = 58 and males with 2n = 57 chromosomes. Using the G-banding technique it was possible to identify pairs of homologous chromosomes and with the C-banding technique, the presence of regions of constitutive heterochromatin in macrochromosomes and microchromosomes. Silver impregnation detected the nucleolar organizer regions (NORs) in two microchromosomes in males and only one of the microchromosomes in females in *C. carbonaria*. The same pattern was found in *P. geoffroanus*. The FISH technique revealed the presence of rRNA sites showing positive staining for NORs. This study showed the ability of classical and molecular cytogenetic techniques to identify the chromosomes of males and females of *C. carbonaria* and *P. geoffroanus*, terrestrial and aquatic species, respectively, making it possible to use them as a model for genetic and evolutionary studies.

Key words: Turtle; Karyotype; FISH; G-banding; C-banding; Nucleolar organizer regions

