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Population study of the B chromosome frequency in the grasshopper *Abracris flavolineata*

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Abstract/Resumo

Additional parasitic elements known as B chromosomes have been described in approximatey 15% of eukaryotic species. They have primary characteristics that define their origin, composition, ways of accumulation and evolution, such as irregular modes of inheritance, pairing incapacity with standard A chromosomes during meiosis and accumulation of distinct repetitive DNAs. The grasshopper *Abracris flavolineata* presents diploid number 2n = 23, X0 (male) and 2n = 24, XX (female) and presence of one or two B submetacentric chromosomes were reported exclusively in Rio Claro/SP population, varying in frequency temporally from 13.5% to 31.5% in males. In this work aiming to understand the spatial variation of B chromosome we investigated presence and frequency of B chromosomes in males belonging to three populations, Santa Bárbara do Pará/PA, Cabo/PE and Posadas/Misiones/Argentina using 61, 19 and 14 individuals, respectively. For Argentina population the frequency estimated was only 7,14% (one individual), while for Pernambuco it was higher with about 21,05% (four individuals), and for Pará none of the individuals presented B chromosomes. None of the populations presented individuals with 2B chromosome as reported in Rio Claro/SP, suggesting differential drive and accumulation. The fluctuation of B chromosome frequency and accumulation in these natural populations could be explained by several factors, like differences in parasitism rate, genetic drift or else by negative effects for host development. Moreover local environment characteristics, associated to possible reproductive isolation, caused by vicariance processes, could also influence B chromosome frequency variation. Here we expanded the knowledge of B chromosome geographic distribution in *A. flavolineata* and the next step is to check if the B chromosome is the same variant in distinct populations, using for example the U2 snDNA as probe, wich is present in the B chromosome from Rio Claro/SP population.

Keyword/Palavras-chave: Supernumerary chromosomes; Cytogenetics; Evolution

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