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Insigths about satDNAS organization in holocentric chromosomes using Holhymenia histrio (Heteroptera) as model

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Abstract/Resumo

SatDNA are organized in tandem and often distributed in heterochromatic regions, corresponding mainly to centromeres. Evolution for satDNAs is directed by "concerted evolution" that leads to sequence homogenization, frequently generating species-specific patterns. Among insects with holocentric chromosomes, organization of satellite DNAs (satDNAs) is still poorly know in comparison to species with monocentric ones. Here, using of the advantage of genome sequencing and computational analysis we characterized for the first time the entire satellitome of an insect with holocentric chromosomes, *Holhymenia histrio*. It was noticed 37 satDNA families (named HhisSat1 to HhisSat37) with monomer length between 46 and 487. Among the 37 satDNAs families, seven were selected based in abundance to be chromosomally mapped. HhisSat1-3 and HhisSat12 were the most abundant and showed hybridization signals, like a band pattern, forming large co-located chromosomal blocks. These sequences (HhisSat1-3 and HhisSat12) were similar suggesting that they from form a family with four subfamilies. High inter-individual polymorphism was noticed for the four sequences (HhisSat1-3 and HhisSat12), revealing similar co-spreading for the sequences, indicating that they moved together. satDNAs with lower repeatability exhibited a dispersed signal in some chromosomes (HhisSat24 and HisSat35). HhisSat35 was highlighted due to placement in euchromatic m-chromosomes, revealing information about their composition, an issue poorly knows. However, no signals were observed for HhisSat37, showing that this satellite was not arranged in large clusters. This result is similar to the observed in *Locusta migratoria*, showing that the non-clusterization of satellite DNAs could be a common pattern also for holocentric chromosomes. The high variability in copy number and chromosomal distribution observed for *H. histrio* highlights the plasticity of satDNAs in insects with holocentric chromosomes.

Keyword/Palavras-chave: Heteroptera; Holocentric chromosome, Satellite DNA

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