

## Karyotypes in *Hymenaea* L., *Guibourtia* Benn. and *Peltogyne* Vog. (Leguminosae, Caesalpinioideae) and its taxonomic implication

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### Abstract

*Hymenaea*, *Guibourtia* and *Peltogyne* are part of the Hymenaea clade and they present interesting taxonomic challenges and biogeographical patterns. This study presents karyotype data (chromosome numbers and CMA/DAPI banding) from representatives of these genera and some preliminary evidences for an improvement of taxonomy and biodiversity knowledge of the group.

### Key words:

Chromosome number, CMA/DAPI banding, Systematic.

### Introduction

*Hymenaea* L., *Guibourtia* Benn. and *Peltogyne* Vog. belong to the Detarieae tribe (Leguminosae, Caesalpinioideae) and they are supported by phylogenetic studies as the Hymenaea clade<sup>1</sup>. Representatives of this clade are mainly recognized by their arboreal habit, bifoliolate leaves and resin production capacity. Due to a vegetative similarity between these genera, it is common to find mixed materials in herbarium collections and even misidentifications in some species lists. *Hymenaea* and *Guibourtia* currently comprises about 14 species each<sup>2</sup>, nevertheless, the distribution of these species presents a curious pattern: *Hymenaea* has most of its diversity in the Neotropical region, with the exception of *H. verrucosa* Gaert. (restricted to East Africa and Madagascar), while *Guibourtia* has most of its diversity on the African continent, except *G. hymenaeifolia* (Moric.) J.Léonard (restricted to South American)<sup>2</sup>. *Peltogyne* is distributed only in the New World. Even with an evident difficulty in the delimitation of taxa and an interesting biogeography pattern, the knowledge on cytological characteristics for the group is scarce. Thus, this work aims to provide karyotype data on representatives of Hymenaea clade, helping further taxonomic and evolutionary studies.

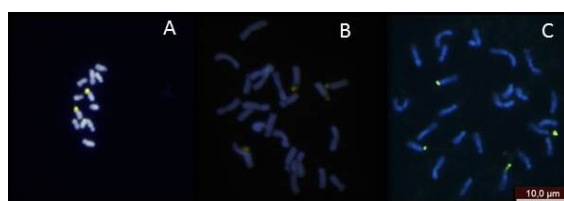
### Results and Discussion

We observed different numbers of chromosome and of CMA<sup>+</sup> bands (GC-rich sites) among the nine species studied (Table 1, Image 1).

**Table 1** – Chromosome numbers (2n) and CMA<sup>+</sup> bands of species of *Guibourtia*, *Hymenaeae* and *Peltogyne*. \* new counts, <sup>3</sup> and <sup>4</sup> – confirm previous studies.

Species	2n	CMA <sup>+</sup> bands
<i>G. coleosperma</i> J.Léonard	2n=48 <sup>4</sup>	one pair
<i>G. conjugata</i> J.Léonard.	2n=24 *	one pair
<i>G. hymenaeifolia</i> (Moric.) J. Léonard	2n=12 *	one pair
<i>H. courbaril</i> L.	2n=24 <sup>3</sup>	two pairs
<i>H. intermedia</i> Ducke	2n=24 *	two pairs
<i>H. martiana</i> Hayne	2n=24 <sup>3</sup>	two pairs
<i>H. parvifolia</i> Huber	2n=24 <sup>3</sup>	two pairs
<i>H. stigonocarpa</i> Hayne	2n=24 <sup>3</sup>	two pairs
<i>P. pauciflora</i> Benth.	2n=24 *	two pairs

The chromosome number presented by *G. hymenaeifolia* and *G. coleosperma* stands out by escaping from the range presented by other caesalpinoids legumes (2n=22 to 2n=24)<sup>5</sup>. The data for *G. hymenaeifolia* (2n=12) is interesting also by being the smallest and half of the number find in most of the representatives of the clade Hymenaea.



**Image 1** - Chromosomes and CMA<sup>+</sup> bands. A. *Guibourtia hymenaeifolia* (2n=12); B. *Hymenaea* aff. *courbaril* (2n=24) and C. *Peltogyne pauciflora* (2n=24).

### Conclusions

Representatives of Hymenaea clade present predominantly 2n=24 and two pairs of CMA<sup>+</sup> bands. The occurrence in the neotropics and the chromosome number of 2n=12 can be indicative that *G. hymenaeifolia* could belong to a different lineage than the African species of the genus. Phylogenetic studies are being conducted to evaluate if this taxon can be treated as a new genus. We are obtaining data from more taxa to associate these with phylogenetic and taxonomic studies that are being conducted in the DBV-IB for a better understanding of the Hymenaea clade diversity and systematic.

### Acknowledgement

Authors thank FAPESP, CNPq, and FAPERJ.

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