

Advances in the phylogenetic study of the tribe Cinchoneae (Rubiaceae) with emphasis on the genus *Cinchona* and *Ladenbergia*

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In its current circumscription, the Cinchoneae tribe includes 9 genera of neotropical distribution. Its species occur mostly in the Andes in South America, with few reaching Central America. Preliminary phylogenetic studies have suggested the monophyly of Cinchoneae but intrageneric relationships are still debatable. In this study, we sampled 8 genera of Cinchoneae (with ca 50% of species for *Cinchona* and *Ladenbergia*) and obtained multiple single-copy nuclear loci (ca 207 genes) by using the “Angiosperm353 universal probe set”, which was complemented with a taxonomic review of Cinchoneae. Phylogenetic inferences were realized with multispecies pseudo-coalescent (ASTRAL III) and gene concatenation analysis (ML). Our results strongly support the monophyly of the tribe and most of the genera, except for *Ladenbergia*. Furthermore, *Ciliosemina*, *Ladenbergia*, and *Remijia* formed a clade, although the position of *Ciliosemina* (= *Remijia pedunculata*) and *Ladenbergia muzonensis* is still elusive. The position of *Ladenbergia muzonensis* is intriguing due to its intermediate floral morphology, which resembles both *Remijia* and *Ladenbergia* species. Additionally, our phylogeny also supports the recognition of a new species in *Cinchona*. Finally, our results show that sequencing data using the probe set designed for multiple gene capture is a useful tool for phylogenetic reconstructions in taxonomically complex groups.