Phylogenetic relationships and generic re-arrangements in "South Andean Loasas" (Loasaceae)

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Resumen

Loasaceae, a mostly American group, is one of the largest families of Cornales. In spite of considerable progress over the last 20 years, the relationships of some clades remain controversial, especially in the "South Andean Loasas" (SAL-Blumenbachia, Caiophora, Loasa, Scyphanthus). The present study addresses the phylogenetic relationships in SAL employing four plastid markers (rps16, trnL-trnF, trnS-trnG, matK) and ITS and aims at resolving the systematics and evolution of the group. Sequences obtained from a total of 59 SAL species (ca. 70% of the total, representing all lineages in the group) and 25 outgroup taxa were analysed using maximum likelihood and Bayesian inference approaches. ML best and BI strict consensus trees showed no significant differences in their topologies. Our results confirm that two species of Loasa ser. Malesherbioideae are not part of the SAL clade, but should be included in Presliophytum, a result which is here formalized. Blumenbachia (including sect. Angulatae and sect. Gripidea) is confirmed as a monophylum with high support. Loasa has to be redefined and restricted to a clade including only ser. Deserticolae, ser. Floribundae, ser. Loasa and ser. Macrospermae. Scyphanthus and Caiophora both are each monophyla and sister groups, but with two clades of Loasa as successive sister groups: (((Caiophora+Scyphanthus) +Loasa ser. Pinnatae)+(L. ser. Volubiles+L. ser. Acaules)) in a very well-supported clade. Accordingly, Caiophora, Loasa ser. Pinnatae, L. ser. Volubiles, L. ser. Acaules and Scyphanthus could be included into a single genus, with Scyphanthus taking priority over Caiophora, creating a fairly heterogenous genus of ca. 52 species and requiring 50 new names. Alternatively, the clades Loasa ser. Pinnatae and L. ser. Volubiles+ser. Acaules can be removed into new segregate genera, which is here argued for and which requires the creation of only 16 new names. The new genus names and some of the new combinations are here formalized.

Palabras clave

Palabras clave de autor: Blumenbachia; Caiophora; morphology; Loasa; plastid markers; Scyphanthus
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