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Phylogenetic Placement and Circumscription of Tribes Inuleae s. str. and Plucheeae (Asteraceae): Evidence from Sequences of Chloroplast Gene *ndh*F

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Abstract

DNA sequences from chloroplast gene *ndh*F were investigated in 15 species in tribes Inuleae Cass. s. str., Plucheeae (Benth.) A. Anderb., and Gnaphalieae Benth. (Asteraceae) and combined with 90 *ndh*F sequences from GenBank to evaluate the circumscription of the putative sister tribes Inuleae and Plucheeae. The data were subjected to phylogenetic analysis using parsimony jackknifing. The results are presented in a cladogram and discussed in comparison to previous analyses of both molecular and morphological data. The interpretations of specific diagnostic characters are also

discussed. The majority of genera from Inuleae s. str. and Plucheeae comprise a monophyletic group, sister to the Heliantheae s. l.â€“*Blepharispermumâ€“Athroisma* group. The genera of the Gnaphalieae belong to a different monophyletic group within the family that also includes tribes Anthemideae, Astereae, and Calenduleae. Within the Inuleaeâ€“Plucheeae complex, two well-supported subclades were identified, one corresponding to the Inuleae s. str. and the second to the Plucheeae. Three genera, *Antiphiona, Pegolettia,* and *Geigeria,* were outside of both tribes and were part of an unresolved polytomy at the base of the Inuleaeâ€“Plucheeae clade. *Anisopappus,* hitherto considered a member of Inuleae s. str., was found to be part of the Heliantheaeâ€“*Athroismaâ€“Blepharispermum* clade. As discussed, the results of previous phylogenetic analyses, presenting *Anisopappus* as the basalmost taxon of Inuleae s. str., may be due to inadequate sampling.

Previous article

Next article

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Chemosystematic studies of natural compounds isolated from Asteraceae: characterization of tribes by principal component analysis, as a consequence of the laws of latitudinal zonality and vertical

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