© Verein Alexander Just: Dorfbeuren - Salzburg - Brüssel; download unter www.biologiezentrum.at

Phylogeny of the genus *Melampodium* (Heliantheae, Asteraceae) and the origins of Polyploids of sect. *Melampodium*

Cordula BLÖCH, Hanna WEISS-SCHNEEWEISS, Michael H. J. BARFUSS, Carolin Anna REBERNIG, José Luis VILLASEÑOR & Tod F. STUESSY

The genus *Melampodium* (Heliantheae, Asteraceae) comprises 39 species centred in Central America, and exhibits a broad spectrum of basic chromosome numbers (x = 9, 10, 11, 12 and 14) and frequent polyploidy. The basic chromosome number change has played an important role in the evolution of the genus and correlates well with its current sectional classification encompassing six sections: *Melampodium* (x = 10), *Zarabellia* (x = 9), *Serratura* (x = 12), *Bibractiaria* (x = 14), *Rhizomaria* (x = 11), and Alcina (x = 11). A study of the phylogenetic relationships of the genus based on plastid and nuclear DNA sequence analyses combined with cytogenetic analyses allows us (1) to test the current classification of *Melampodium*, (2) to hypothesise on modes and mechanisms of chromosome number change, and (3) to gain insight into the origin of polyploids. The current sectional classification is supported for four out of the six sections. Two putative sister genera of *Melampodium*, *Acanthospermum* and *Lecocarpus* (both x = 11), branch from within a basal polytomy of genus *Melampodium*. x = 11 has been inferred as the ancestral basic chromosome number, and two other derived basic chromosome numbers (x = 9 and 10) are hypothesised to have originated independently two times each. The analyses of different marker sets (cp *matK*, nr 5S rDNA spacer and nr ITS, low copy nuclear gene *pgiC*) reveal incongruencies which, together with molecular cytogenetic analyses, allow to infer the allopolyploid origin of several species of ser. *Sericea* and ser. *Melampodium* in sect. *Melampodium*.

© Verlag Alexander Just: Dorfbeck/Kassel; download unter www.biologiezentrum.at

addresses:

Cordula BLÖCH, Hanna WEISS-SCHNEEWEISS, Michael H. J. BARFUSS,
Carolin Anna REBERNIG & Tod F. STUESSY
Faculty Center of Botany
Department of Systematic and Evolutionary Botany
University of Vienna
Rennweg 14
A-1030 Wien

José Luis VILLASEÑOR
Instituto de Biología
Departamento de Botánica
Universidad Nacional
Autonóma de México
México D.F.

email:
cordula.bloech@univie.ac.at

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: Sauteria-Schriftenreihe f. systematische Botanik, Floristik u. Geobotanik

Jahr/Year: 2008

Band/Volume: 16

Autor(en)/Author(s): Blöch Cordula, Barfuß Michael H. J., Weiss-Schneeweiss Hanna, Stuessy Tod F., Rebernig Carolin Anna, Villasenor José Luis

Artikel/Article: Phylogeny of the Genus Melampodium (Heliantheae, Asteraceae) and the origins of Polyploids of sect. Melampodium 178-179