

family Oleaceae. The species numbers are estimated from 150 to 450 depending on the authors. Several species are widely cultivated in all over the world. However, most species are distributed in Asian/African sub-/tropic regions. The genus is traditionally classified into two groups, section *Alternifolia* and the opposite-leaved group, based on the arrangement of leaves. The opposite-leaved group further classified into three sections: *Unifoliolata*, *Pinnatifolia* and *Trifoliolata*, based on the number of leaflets. Recent molecular sequence data suggest that the *Menodora* may include within *Jasminum*. In order to evaluate the phylogenetic relationships between *Menodora* and *Jasminum* and to estimate the evolutionary directions of leaf character in *Jasminum*, we sequenced the *trnT*-L-F regions (\approx 1600bp) of chloroplast genome and nuclear ITS regions (\approx 700bp) from including 16 species of *Menodora*, 70 species of *Jasminum*, and 10 outgroup genera. Both nuclear ITS and chloroplast *trnT*-L-F sequence data support the monophyly of three major clades including *Menodora*, alternate-leaved *Jasminum* and opposite-leaved *Jasminum*. The genus *Menodora* was nested within *Jasminum* and form a sister clade to the alternate-leaved *Jasminum*. Traditionary recognized three sections within the opposite-leaved *Jasminum* were not monophyletic and mixed each others in some species. The monophyly of *Menodora* was further supported by an unique 300bp insertion mutation in the chloroplast *trnT*-L noncoding region.

A213 Molecular phylogeny of the genus *Hypericum* (Hypericaceae) from Korea and Japan: an evidence from nuclear rDNA ITS sequence data

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Hypericum includes approximately 350-400

species, distributed in worldwide. Among them, 26 species are distributed in Korea and Japan. Although there has been considerable effort to resolve sectional circumscription and relationship of the genus *Hypericum*, much controversy still remain regarding these taxonomic issues in the genus. As a part of our ongoing phylogenetic study of the genus *Hypericum*, here we performed the phylogenetic analysis of the nuclear ribosomal DNA internal transcribed spacer(ITS) sequences from 24 Korean and Japanese species and three other outgroup species. The sampling included most of previously described species both from Korea and Japan. The ITS phylogeny suggest that *Hypericum* species from Korea and Japan grouped into three monophyletic sections (*Hypericum*, *Roscyna* and *Trigynobrathys*). *H. sampsonii* was treated to section *Hypericum* or to section *Drosocarpium* by previous morphological study, but ITS tree support the species as a member of section *Roscyna* or the distinct fourth section rather than section *Hypericum*. The taxonomically problematic *H. kamtschaticum* was a sister species of *H. erectum* within the section *Hypericum*. This result is in agreement with recent suggestions based on morphological and cytological studies. Phylogenetic relationships among species from Korea and Japan are mostly resolved on the ITS tree.

A214 생식기관 형태에 기초한 모데미풀의 계통분류학적 연구

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지금까지 모데미풀은 분류학적 위치에서 특산속으로의 처리에 많은 논란이 있으며 화분연구 및 그의 연구에서도 정확한 결론을 내리지 못하였다. 따라서 본연구는 한국 특산속 식물인 모데미풀의 계통분류학적 위치를 분명히 하기 위하여 모데미풀의 생식기관형성 초기부터 성숙종자단계까지의 재료를 사용하여 파라핀법으로 생식기관 해부형태를 조사하였다. 실험결과 모데미풀은 생식기관의 발달과정에

서 소포자가 연속형 세포질분열을 나타냈고 배주는 bitegmic, tenuinucellate, 종피는 exotestal type 등의 특징을 갖는 것으로 밝혀졌으며, 그외의 생식기관 형태는 미나리아재비과에서 공유되는 형질들이었다. 지금까지 가장 근연식물군이라고 언급되어온 금매화속과 너도바람꽃속의 생식기관 해부형태와 비교해본 결과, 가장 뚜렷한 차이는 종피형태가 금매화속은 endotestal type인데 반하여 모데미풀은 exotestal type 이었으며, 너도바람꽃속은 unitegmic을 가지고 있어 금매화속이나 모데미풀속의 bitegmic 과는 뚜렷한 차이를 나타냈다. 또한, 소포자 세포질분열과정에서 모데미풀의 근연식물군이 모두 동시형세포질분열패턴을 보이는 반면, 모데미풀은 연속형 세포질분열 패턴을 나타냈다. 이러한 뚜렷한 차이는 모데미풀이 한국특산속으로 처리되는 것이 타당하다는 것을 지지하는 것으로 사료되며 금후 분자계통학 수준에서의 연구를 통하여 이를 입증하려고 한다.

A215 Morphological variation of the *Dryopteris varia* complex in Korea

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The *Dryopteris varia* complex in Korea includes six controversial species; *D. varia*, *D. pacifica*, *D. bissetiana*, *D. saxifraga*, *D. saxifragi-varia*, and *D. sacrosancta*. To elucidate the taxonomic identities of the complex in Korea, we examined the reproduction mode and the patterns of morphological variation using landmark analysis and principal components analysis. The results revealed the presence of five distinct entities in the complex; (1) *D. varia*, (2) *D. pacifica*, (3) *D. sacrosancta*, (4) a group including *D. bissetiana*, *D. saxifraga* and *D. saxifragi-varia*, and (5) Suak population. Individuals of *D. bissetiana*, *D. saxifraga* and *D. saxifragi-varia* are further distinguished by the scale shape, and the latter was assumed to be derived from hybridization between the former two.

A216 Morphometric and RAPD analyses of tribe Forsythieae (Oleaceae)

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Although taxonomists have suggested many results on taxonomic status and relationships of *Abeliophyllum* Nakai (Forsythieae, Oleaceae; one of the Korean monotypic species) and its related genera, there is no confidential agreement yet. To define the taxonomic problems of Forsythieae and discuss the phylogenetic relationships, we performed morphometric and RAPDs analyses on 26 OTUs of tribe Forsythieae (*Forsythia* and *Abeliophyllum*), *Fontanesia* and *Jasminum*. Based on the results of the principle component analysis (PCA) from 33 morphological characters, there were distinct limitations among the treated genera. Also, UPGMA phenogram and Neighbor-Joining tree were produced from the results of RAPDs analysis with 15 oligo primers. The genetic relationships between *Abeliophyllum* and *Forsythia* was higher than that of *Fontanesia*. N-J tree from the RAPDs results suggested that *Abeliophyllum* was confirmed as the closest sister group of *Forsythia*.

A217 Pollen morphology of the genus *Lycopus* L. (Mentheae-Lamiaceae)

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The pollen morphology of 15 species in *Lycopus* L. was investigated by light, scanning electron and transmission electron microscopy. Pollen grains of *Lycopus* are monad, usually medium, rarely small in size ($P=22.5-38.5\mu m$, $E=20.0-37.5\mu m$) and hexacolpate. The pollen grains vary from oblate to prolate in shape even within the same species ($P/E=0.75-1.44$). Exine is bi-reticulate with unbranched columellae.