Systematic Relationships within the *Litsea* Complex (*Lauraceae*)

by

Jie Li

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Department of Environmental Biology

University of Adelaide

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Abstract

Lauraceae contains many species that are important constituents in tropical and sub-tropical forests, both ecologically and economically. This importance makes studying its diversity, taxonomy, and evolution essential. Currently, no widely accepted phylogenetic classification of the family and adequate circumscriptions of many genera exist. Essentially the same set of characters has been used in nearly all systems proposed thus far. The *Litsea* complex is a prime example of a poorly understood and controversial generic grouping within the family.

The *Litsea* complex consists of ten genera with 500-700 species, which are concentrated in tropical to subtropical Asia. Although four modern *Lauraceae* classifications show strong consistency in recognizing the *Litsea* complex, the generic and infrageneric systematic relationships within the complex are unclear and controversial. This study revises the *Litsea* complex, based on a sample of 339 species, with general descriptions of anatomy, palynology, karyology, embryology and distribution, and additionally employs leaf cuticle and molecular systematic data (*mat*K sequences). The study includes morphological data as a bridge to connect its new data with past research results, using cladistic analysis to investigate potential monophyly and to reconstruct the phylogeny of the complex.

As a result, several well supported monophyletic groups have been found, including: *Litsea-Aperula* clade characterized by a long peduncle in the racemiform inflorescence, a *Cylicodaphne–Cupuliformes* clade with cup-shaped fruit cupules, a *Uniumbellatae-Daphnidium* clade with trinerved leaves, a *Parasassafras–Sinosassafras* clade with minute involucral bracts and *a Tomingodaphne–Palminervia–Sphaerocarpae–Lindera* clade characterized by a deciduous habitat. A revised classification of the *Litsea* complex is presented; several sections previously included under *Litsea* and *Lindera* are restored or combined owing to the disappearance of the previous generic delimitation. The fasciculate pseudo-umbel group in *Actinodaphne* is recognized as a new genus *Actinodaphnopsis.* Finally, a key to the revised genera based on morphological characters is presented.