

Araya CHOCHAI 2003. The utility of the 3' region of ndhF in studies of the Fabales :
What is the sister group to the Fabaceae? MSc. in Plant Diversity (Plant taxonomy and
Evolution) The University of Reading, UK.

Abstract

Twenty parsimony analyses were conducted on the 3' region of ndhF for 25 taxa of the Fabales: 19 of which belong to Fabaceae, 3 of which belong to Polygalaceae and one of which belongs to Surianaceae. *Quercus* (Fagaceae) was used as the outgroup of the Fabales. The purpose of the analyses was to investigate the utility of the 3' region of ndhF for phylogenetic reconstruction at different hierarchical levels within the Fabales, in particular at familial level in order to identify the sister group to the Fabaceae.

A high level of variation was found in the 3' region of ndhF, which was of use in elucidating the higher level relationships within subfamily Caesalpinoideae, family Fabaceae, and order Fabales. The level of variation was not sufficiently great to be of value in elucidating relationships at species level.

The relationships within the Fabales based on analyses of the 3' region of ndhF were unstable, and different topologies were discovered when taxon sampling was changed. This instability maybe due to the sparse taxon sampling and the distantly related terminal taxa, leading to problems with long branch attraction.

The molecular data presented here, with current levels of sampling, are not able to identify the sister group of the Fabaceae. However, the levels of variation discovered suggest that it may be worth completing the ndhF study. Whether complete sampling and total evidence of analyses using ndhF and the existing trnL, rbcL and 26S data will uncover the sister group of the Fabaceae is uncertain. It may be that the sister of the Fabaceae is as elusive as the sister group of the Angiosperms.