

**Reduction of lignin content by suppression of expression of the LIM domain transcription factor in *Eucalyptus camaldulensis***

Akiyoshi Kawaoka, Kazuya Nanto, Katsuaki Ishii and Hiroyasu Ebinuma  
Silvae Genetica 55(6) p. 269-277

**Abstract**

We report a reduction of lignin content in the woody plant *Eucalyptus camaldulensis* by the suppression of gene expression of the LIM domain transcription factor. Previously, we identified a cDNA encoding the tobacco (*Nicotiana tabacum*) LIM domain transcription factor, Ntlm1, involved in lignin biosynthesis and that specifically binds to an important *cis*-acting element, the PAL-box sequence. The orthologous Eucalyptus gene of *Ntlm1*, namely *Eclim1*, was isolated from the *E. camaldulensis* cDNA library (84% amino acid identity). The antisense *Ntlm1* construct with a kanamycin-resistant gene was introduced into *E. camaldulensis*. The transgenic Eucalyptus plants grown in the greenhouse showed decreased expression levels of several lignin biosynthesis genes, phenylalanine ammonia-lyase (*PAL*), cinnamate-4-hydroxylase (*C4H*) and 4-hydroxycinnamate CoA ligase (*4CL*). The abnormal phenotypic changes and a 29% reduction of lignin content were observed in the line LG12, in which the transcript level of *Eclim1* was mostly suppressed. *Eclim1* is one of the key transcription factors involved in lignin biosynthesis.