

## **Cloning of Phenylalanine ammonia-lyase (PAL) gene fragment from *Aquilaria malaccensis* Lam. (karas).**

### **ABSTRACT**

Current practice of indiscriminate and illegal felling of 'karas' trees (*Aquilaria malaccensis*) to extract 'gaharu' in the wild have caused the population to dwindle drastically. 'Gaharu' formed as a result of natural defense mechanism in trees, which unfortunately happens over a long period of time. To better understand natural processes of gaharu-making, we sought to study the roles of defense genes in 'karas' by cloning a gene that synthesizes secondary compounds. The phenylalanine ammonia-lyase (PAL) gene encodes an enzyme in the metabolism of phenylpropanoid compounds, which are produced in response to stress, such as damage by wounding and pathogen attack. We report a cloned PAL gene fragment from *A. malaccensis* using the polymerase chain reaction (PCR) technique. The fragment was amplified from genomic DNA of a wounded 2-year old tree and cloned into the pGEM-T Easy Vector. The cloned fragment had a length of 610bp and an uninterrupted open reading frame of 201 amino acids. When searched against the Genbank database using BLAST tools, the cloned fragment shared 92% sequence similarity at amino acid level to known PAL proteins. This work will serve as a foundation in identifying important genes for triggering 'gaharu' synthesis.

**Keyword:** *Aquilaria malaccensis*; PAL gene; Phenylalanine ammonia.