

## **Isolation and characterization of an ethylene-responsive element binding protein (EgEREBP) from oil palm (*Elaeis guineensis*)**

### **ABSTRACT**

The AP2/ERF (APETALA2/ethylene-responsive factor) proteins play important regulatory roles in plant response to stress as well as plant growth and developmental processes. Using yeast one-hybrid system and three tandem repeats of the ERE (ethylene-responsive element) as a probe, an ethylene-responsive cDNA clone designated as EgEREBP (*Elaeis guineensis* ERE-binding protein) was isolated from oil palm fruits treated with ethylene hormone. The EgEREBP-encoded protein has a conserved AP2/EREBP DNA-binding domain (DNA-BD), a potential nuclear localization sequence, and a putative activation domain. EgEREBP protein was classified as a member of DREB/CBF (dehydration-responsive element binding protein/c-repeat binding factor) proteins based on the multiple sequence alignment and phylogenetic analysis. EgEREBP showed ERE -binding, transcriptional activation, and transactivation properties in yeast and in vitro. Electrophoretic mobility shift assay (EMSA) revealed that EgEREBP could bind to the DRE in addition to the ERE sequence. RT-PCR analysis revealed that the expression of EgEREBP gene was induced in oil palm fruits in response to a range of hormone treatments, including abscisic acid (ABA), methyl jasmonate (MJ), salicylic acid (SA) and abiotic stresses, including drought, cold and high-salinity. Our data demonstrated the regulatory functions of EgEREBP gene in stress response and ethylene signaling in oil palm which could be potentially useful for the production of stress-tolerant transgenic crops.

**Keyword:** Abiotic stress; AP2/ERF; Ethylene-responsive element; Transcription factor; Yeast one-hybrid