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Molecular cloning and characterization of GbMECT and GbMECP gene promoters from *Ginkgo biloba*

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ABSTRACT. Ginkgolides are key pharmaceutical components in *Ginkgo biloba*. Using the cDNA sequence of the MECP and MECT genes to design primers, we obtained the promoters of these genes from *Ginkgo* genomic DNA using the genome walking method. The two promoters were 744 and 982 bp in length, respectively. The cis-elements of the GbMECPs and GbMECT promoters were predicted and analyzed using the plant cis-acting regulatory element database. We found major cis-elements in the sequence of the GbMECT and GbMECPs promoters. The GbMECP promoter contains six TATA boxes and eight CAAT boxes. The GbMECT contains five TATA boxes and seven CAAT boxes. Furthermore, some cis-elements in the promoters of GbMECPs and GbMECT included hormone and light-regulated elements, UB-B-induced elements, and stress-related dehydration-responsive elements. Expression analysis results showed that the MECP gene is mainly involved in responses to CCC (cycocel) and UV-

B, and that MECT is mainly involved in responses to wounding treatment. These results also showed that the expression model was consistent with the cis-elements present. During the annual growth cycle, the level of GbMECPs was significantly correlated with terpene lactones accumulation in leaves. A fitted quadratic curve showed the best model for correlating GbMECPs with terpene lactones in leaves. These results will help us to understand the transcriptional regulatory mechanisms involved in key gene expression and ginkgolide accumulation in *G. biloba*.

Key words: Cis-acting elements; Hormone; Wounding; Diterpenoids; Terpene lactones; Functional analysis

