Genome-wide identification and phylogenetic analysis of the SBP-box gene family in melons

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ABSTRACT. The SBP-box gene family is specific to plants and encodes a class of zinc finger-containing transcription factors with a broad range of functions. Although SBP-box genes have been identified in numerous plants, including green algae, moss, silver birch, snapdragon, Arabidopsis, rice, and maize, there is little information concerning SBP-box genes, or the corresponding miR156/157, function in melon. Using the highly conserved sequence of the Arabidopsis thaliana SBP-box domain protein as a probe of information sequence, the genome-wide protein database of melon was explored to obtain 13 SBP-box protein sequences, which were further divided into 4 groups, based on phylogenetic analysis. A further analysis centered on the melon SBP-box genetic family’s phylogenetic evolution, sequence similarities, gene structure, and miR156 target sequence was also conducted. Analysis of all the expression patterns of melon SBP-box family genes showed that the SBP-box genes were detected in 7 kinds of tissue, and fruit had the highest expression level. CmSBP11 tends to present its specific expression in melon fruit and root. CmSBP09 expression was the highest in flower. Overall, the molecular evolution and expression...
pattern of the melon SBP-box gene family, revealed by these results, suggest its function differentiation that followed gene duplication.

**Key words:** Melon; SBP-box protein; Phylogenetic analysis; Gene family