M-125

Investigation of GmMYB176 interactome identifies the key factor involved in isoflavonoid biosynthesis in soybean

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MYB transcription factors are one of the largest transcription factor families characterized in plants. An R1MYB transcription factor, GmMYB176 regulates *chalcone synthase8 (CHS8)* gene expression and isoflavonoid biosynthesis in soybean. Preveiously, we demonstrated that GmMYB176 alone is not sufficient for *CHS8* gene regulation and hypothesized that GmMYB176 acts cooperatively with another factor (s). Here we elucidate the GmMYB176 interactome for *CHS8* gene regulation and isoflavonoid biosynthesis in soybean. GmMYB176 interacting proteins were identified using two translational fusion baits (GmMYB176-YFP and YFP-GmMYB176) by co-immunoprecipitation, followed by liquid chromatography-tandem mass spectrometry. The interaction of selected candidates with GmMYB176 was validated *in planta* and their DNA binding activities determined. Our results suggest that GmMYB176 may form a transcriptional complex with Gm04bZIP and/or Gm05bZIP for the regulation of *GmCHS8* gene expression. The characterization of GmMYB176 interactome provides us with the understanding of the regulation of *CHS8* gene and isoflavonoid biosynthesis in soybean.