



***P1BS*, a conserved motif involved in tolerance to phosphate starvation in soybean**

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ABSTRACT. Available phosphate (Pi) is a major limiting factor for plant growth, development, and productivity. Phosphate starvation response 1 (PHR1) is a binding dimer that binds to an imperfect palindromic sequence. PHR1-binding sequences (GnATATnC) exist in the promoter of Pi starvation-responsive structural genes, indicating an effect occurring downstream in the Pi starvation signaling pathway. These sequences are referred to as PHR1-binding site (P1BS) structures. In this study, the sequences of *GmPHR1* and *GmSPX1* from *Glycine max* (L.) Merr. soybean were determined and analyzed. We found that *GmPHR1* is an MYB-related transcription factor. In addition, *GmSPX1* contained a P1BS structure, which is an important *cis*-regulatory motif in the phosphate signaling pathway. We found that *GmPHR1* can physically interact with *GmSPX1* through the *cis*-element, which may be a major pathway for the *GmPHR1*-mediated Pi starvation stress response. Thus, the P1BS structure in the Pi starvation signaling pathway is an important *cis*-regulatory motif that improves the tolerance to low phosphorus conditions in soybean.

Key words: *Cis*-regulatory motif; Soybean; *GmPHR1*; *GmSPX1*; Phosphate starvation