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Cloning of MYB-like genes respond to phosphorus deprivation in rice

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Objective

1. Investigate extensive analyses of transcriptional regulation of MYB-like genes expression in response to phosphate starvation.
2. Determine the molecular mechanism by which rice plant respond to phosphate depletion in soil.
3. Generate new transgenic rice plants that can overcome the phosphate depletion in soil.

Materials and Method

1. Material : Rice (*Oryza sativa*) cv. 'Dong-jin'
2. Method : Northern blot analysis, genomic/cDNA library screening, PCR cloning

Result and discussion

We isolated the 3 different MYB-like genes (OsMYB1-3) respond to phosphorus deprivation in rice (*Oryza sativa*). The encoded polypeptides are 30% identical to other plants and show high degree of amino acid sequence similarity with MYB-like gene of *Arabidopsis thaliana*. OsMYB1 is 458-bp long and contains an open reading frame encoding a 152 amino acid polypeptide, whereas OsMYB2 is 776-bp long and encodes a 258 amino acid polypeptide. The two clones are 73% similar in their nucleotide sequence within the coding region. The two polypeptides are 53% identical in their amino acid sequence. The RNA blot analysis showed that expression of OsMYBs are various in response to phosphate deficiency. In particular expression of OsMYB1 and OsMYB2 were up-regulated in phosphate deficiency condition. Now we are generating transgenic rice plants overexpressing OsMYB genes.

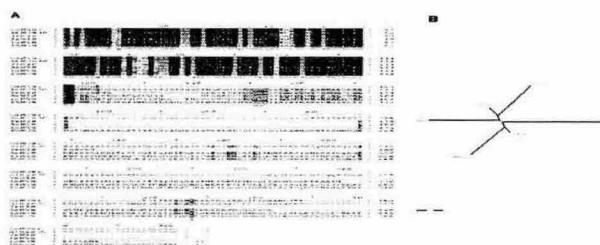


Fig. 1. Multiple alignment of rice Myb(OsMyb1) with other Mybs.