



Molecular and biological studies in *Medicago truncatula* plant mutant line by *Tnt1*

Thesis

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Abstract

blkn is a *Medicago truncatula* mutant achieving null function-black nodule phenotype. *blkn* is a *Tnt1*-retrotransposon mutant. Interestingly, *blkn* exhibited double contents of phenolic compound compared with R108 wild type. Nodule of this mutant is displaying cells abnormality in both infection and nitrogen fixation zones. Transverse section of *blkn* nodule doesn't clearly display characteristic shape like control and the symbiotic cells weren't totally filled with bacteroids along with high lignification at the cell wall periphery. Our goal was *blkn* mutant phenotype, physiological, and molecular characterization. AFLP-based PCR protocol was used to identify the mutated gene(s) in this mutant line. About 25 *Tnt1*-tagged fragments ranging from ~100 to ~500 bp were isolated, sequenced and submitted to gene bank. The *Tnt1* insertion was precisely located next to the base number 303 post ATG start codon of *M. truncatula* L-type lectin-domain receptor kinase VII.2 gene encodes Lectin_LegB Receptor Like Kinase. MtLectinRLK contains Lectin_legB domain, two transmembrane helix (TMhilex) and an extracellular Receptor Protein kinase (Pkinase). MtLectinRLK is an ancestry related to probable L-type lectin-domain containing receptor kinase *Cicer arietinum*, *Trifolium pretense*, *Lupinus angustifolius*, *Phaseolus vulgaris*, *Vigna radiate*, and *Glycine soja*

Keywords

blkn mutant, *Medicago truncatula*, lectin-domain, receptor kinase, *Tnt1* retrotransposon, Genetic analyzer, FSTs, AFLP
