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Title: Protein profiling of Rhizobium isolates of Green Gram (*Vigna radiata* L.) collected from acidic soils of Jharkhand by employing 2-DE

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Abstract: Acidic soil in Jharkhand occupies approximately 90 percent area of the land. Soil acidity affects many area of the world and limits legume productivity. Most leguminous plant requires neutral or slightly acidic soil for growth, especially when depending on symbiotic nitrogen fixation (correa and barneix, 1997). The major problems of legume growth in strongly acidic soils are multiple nutrient disorders, including toxicities of H⁺, Al and Mn and deficiencies of Ca, Mg, P and Mo (Jayasundara et al., 1998). However, few strain has been indentified that can tolerate acidity and nodulate successfully. In current study protein profiling of Rhizobium isolates collected from acidic soil was carried out. Protein profiling involves comparison of two dimensional gels to understand various biological processes by determining the presence or absence, up and down regulation, and modification state of proteins in acidic stress. In the study we showed that the crop *Vigna radiata* has different unique spots at various pH regimes. We analysed unique spots with the help of Two Dimensional Gel Electrophoresis. Two Dimensional Polyacrylamide Gel Electrophoresis of proteins is a robust and reproducible technique. It is the most widely used separation tool in proteomics. Mung is a leguminous plant which shows symbiosis relationship with the Rhizobium and produces nodules, within nodules, atmospheric nitrogen converted into ammonia therefore proteomics is an ideal tool for the dissection of plant microbe interactions. Proteomics provides a broad overview of the proteins produced by both partners during their constant signal exchange. It also detects the signal transduction pathways by following phosphorylation changes of proteins (Peck et al., 2001). In our study Two-dimensional electrophoresis was done to analyze the various proteins and their regulation under acidic condition. Rhizobial cell respond to acidity by either up-regulation or down-regulation of genes that leads to the increased or decreased translation of specific proteins. To study the stress proteins of Rhizobia by twodimensional electrophoresis, protein profiles under different pH ranges were compared. Through studying the proteome of Rhizobium in acidic soil condition, the response of the isolates towards acidity of soil is being analyzed. At the molecular level, we find that the two-dimensional gel analysis reveals a host of proteins which are found to be up-regulated or down-regulated in response to different pH conditions. We hypothesize that adaptation mechanism taking place in mung to resist and recover in response to abiotic stress such as acidic soil.

Description: Protein profiling of Rhizobium isolates of Green Gram (*Vigna radiata* L.) collected from acidic soils of Jharkhand by employing 2-DE

Subject: Biotechnology

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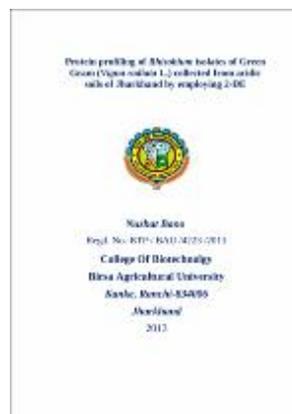
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