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Title: Two-dimensional protein profiling of Rhizobium isolates of Pisum sativum L. (Pea) collected from acid soils of Jharkhand

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**Abstract:** The aim of the present study is to perform protein profiling of Rhizobium isolates *Pisum sativum* L. (Pea) collected from acid soil of Jharkhand by employing Two-dimensional gel electrophoresis. Rhizobia are the soil bacteria that fix nitrogen which is very essential for the plant growth. Rhizobium acts as primary symbiotic nitrogen fixer of nitrogen. It provides major biological source of fixed nitrogen in agriculture soil and responsible for significant amount of nitrogen fixation. Pea is legume crop. It is one of most nutritious vegetables, rich in health benefiting phytonutrients, minerals, vitamins and anti-oxidants. It is a good source of protein and soluble as well as insoluble fibres. For the good growth of pea, soil pH ranges of 6.0-6.8 are recommended. Optimization MS Compatible Silver Staining protocol will also be carried out utilizing Plus One Silver Staining Kit. Soil acidity is one of the most serious problems affecting growth of Rhizobium in the soil of Jharkhand. Most of the legume requires neutral or slightly acidic soil for symbiotic nitrogen fixation. Rhizobium-legume symbiosis is one of the ideal solutions to the improvement of soil fertility and restoration of arid land. By employing 2-D in our analysis, various protein spots of Rhizobium isolates were analyzed. Protein plays a major role to cope up with abiotic stress. Each rhizobial cell responds to acidity by either up-regulation or down-regulation of genes that leads to increased or decreased translation of specific protein. At the molecular level, we find that the two-dimensional gel analysis reveals a host of proteins which are found to be upregulated or down-regulated in response to different pH conditions. We hypothesize that the protein changes observed on two-dimensional electrophoresis in response to different pH of acidic soil reflected the molecular adaptation mechanism taking place in progress in pea to combat and recover in response to abiotic stress such as acidic stress.

**Description:** Two-dimensional protein profiling of Rhizobium isolates of *Pisum sativum* L. (Pea) collected from acid soils of Jharkhand

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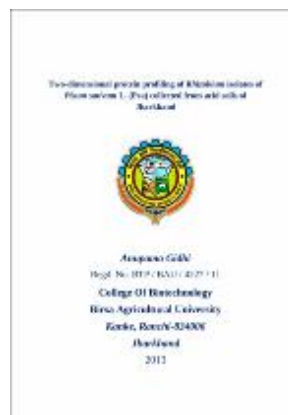
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