

MEDIA OPTIMIZATION FOR RHIZOSPHERIC ISOLATED FUNGUS ON EFFECTIVE PHOSPHATE SOLUBILIZATION

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Numerous soil microbes known as phosphate solubilizing microorganisms (PSMs) are capable of solubilizing insoluble forms of soil phosphate to liberate soluble P and make it available to plants. The growth and productivity of many different crops can be enhanced through these PSMs. Thus, introducing PSMs to seeds, crops, and soil is a promising method for promoting sustainable agriculture without endangering the environment. Hence this study was conducted to isolate and optimize the culture media for effective P solubilizing fungus. All experiments were conducted in laboratory conditions with a CRD, with three replicates. All the data were statistically analysed using analysis of variance, and means were separated using Tukey's HSD test. Four fungal strains were isolated from rhizospheric soils of rice, maize, and chilli plants. These fungal strains were tested for their ability to solubilize tricalcium phosphate on both solid and liquid Pikovskaya (PVK) media *in vitro* and evaluated the P solubilization. The most effective P solubilizer was further tested for media optimization. Different N, P, C sources, and pH were optimized for selected fungal strains. A fungus isolated from chilli rhizosphere (F_C) was identified as the most effective P solubilizer with an established significantly highest solubilized P and solubilizing index (SI) for P. At the end of the media optimization study, it was observed that potassium dihydrogen phosphate as the P source, fructose as the C source, ammonium sulphate as the N source, and neutral pH (pH 7) could maximize the solubilization of P with F_C. Moreover, F_C showed good potential for developing an inoculum for soil with its optimized media. Further improvements would be essential prior to introduce F_C as a P-solubilizing fungal inoculum.

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