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Phytate mineralising bacteria increase in the rhizosphere of nodulated common bean (*Phaseolus vulgaris*) under P deficiency

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A lthough soils are rich on phosphorus (P) compounds, their low availability is a wide spread abiotic constraint that causes plant yield instability. Phytate is generally contributing among soil organic phosphorus compounds. However, to be used by plants, the phytate must be hydrolyzed by specific phosphatase enzymes called phytases. The aim of this work was to determine if the *B. subtilis* BPP could make P available from phytate for the benefit of a nodulated legume, the P sensitive recombinant inbred line RIL147 of *Phaseolus vulgaris* was grown under hydroaeroponic conditions with either 12.5 μ M phytate (C₆H₁₈O₂₄P₆) or 75 μ mol Pi (K₂HPO₄), and inoculated with *Rhizobium tropici* CIAT899 alone, or co-inoculated with both *B. subtilis* DSM 10 and CIAT899. The results indicated that the in situ RT-PCR of BPP genes displayed the most intense fluorescent BPP signal on root-tips. Some BPP signal was found inside the root cortex and the endorhizosphere of the root tip, suggesting endophytic bacteria expressing BPP. However, the co-inoculation with *B. subtilis* was associated with a decrease in plant P content, nodulation and the subsequent plant growth. Such a competitive effect of *B. subtilis* on P acquisition from phytate in symbiotic nitrogen fixation might be circumvented if the rate of inoculation were reasoned in order to avoid the inhibition of nodulation by excess *B. subtilis* proliferation. It is concluded that *B. subtilis* BPP gene is expressed in P. vulgaris rhizosphere.

Biography

Maougal Rim Tinhinen is a PhD student from both University Constantine 1 Algeria and SupAgro Montpellier France. She is Assistant Teacher at University Constantine 1. She has published 2 papers in reputed journals.

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