



## Solubilization of Iron and Aluminium Phosphates by Phosphate Solubilizing Microorganisms

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### Abstract

Despite the fact that many insoluble forms of Ca, Fe and Al phosphates occur in soil, information on solubilization of them by phosphate solubilizing microorganisms (PSMs) is still reported to be scanty. The present study screened PSMs which can solubilize Fe and Al phosphates. Twenty bacterial and four fungal strains isolated from Boryeong area in South Korea were used in this study. The Ca phosphate solubilization assay was performed using NBRIP liquid medium and Al phosphate and Fe phosphate solubilization were assayed by adding 4 g/l  $AlPO_4$  and 6 g/l  $FePO_4 \cdot 2H_2O$  separately instead of  $Ca_3(PO_4)_2$  in NBRIP medium. Though all the strains were proven to be capable in solubilizing all three phosphate sources, the rate of solubilization of Fe (50 -135  $\mu g/ml$ ) and Al phosphate (20 - 45  $\mu g/ml$ ) were remarkably lower than that of the Ca phosphate (450-645 $\mu g/ml$ ). Among the isolated strains, fungal strain PSF-1 showed significantly ( $P \leq 0.05$ ) higher Fe phosphate and Al phosphate (542 and 374  $\mu g/ml$ , respectively) solubilization compared to other strains. The fungal strain identified as *Aspergillus* spp. could be used in making phosphate available to plants in soils with predominance of Fe-phosphates and Al-phosphates over Ca-phosphates and low contents of available P.

**Keywords:** *Aspergillus* spp., Ca phosphate, Fe, Phosphate, Al phosphate, Phosphate solubilizing microorganisms

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